

| <b>Flight performance, planning and loading</b> |  |  |  |   |  |
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| SL NO   | Question   | Option_1   | Option_2   | Option_3  | Option_4   |
| 1.  | Which of the following has references to aircraft mass and balance?  | ICAO Annex 2.  | ICAO Annex 4.  | ICAO Annex 5.   | ICAO Annex 6.  |
| 2.  | The operator must establish the mass of the Traffic Load:  | prior to initial entry into service  | by actual weighing or determine the mass of the traffic load                               | prior to embarking on the aircraft  | by using an appropriate method of calculation  |
| 3.  | The mass of the fuel load must be determined:  | by the operator using actual density or by density calculation specified in the Operations Manual. | by the owner using actual density.   | by the pilot using actual density or by density calculation specified in the Operations Manual. | by the fuel bowser operator using actual density or by density calculation specified in the Fuelling Manual. |
| 4.  | The Dry Operating Mass is the total mass of the aeroplane ready for a specific type of operation and includes: | Crew and passenger baggage, special equipment, water and chemicals                                 | Crew and their hold baggage, special equipment, water and contingency fuel                 | Crew baggage, catering and other special equipment, potable water and lavatory chemicals        | Crew and baggage, catering and passenger service equipment, potable water and lavatory chemicals.            |
| 5.  | The Maximum Zero Fuel Mass is the maximum permissible mass of the aeroplane:                                   | with no useable fuel   | with no useable fuel unless the Aeroplane Flight Manual Limitations explicitly include it. | including the fuel taken up for take-off  | including all useable fuel unless the Aeroplane Flight Operations Manual explicitly excludes it.             |
| 6.  | The Maximum Structural Take-off Mass is:   | the maximum permissible total aeroplane mass on completion of the refuelling                       | the maximum permissible total aeroplane mass for take-off subject to the limiting          | the maximum permissible total aeroplane mass for take-off but excluding fuel.                   | the maximum permissible total aeroplane mass at the start of the take-off run.                               |

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|     |  | operation.  | conditions at the departure airfield.   |  |  |
| 7.  | The Regulated Take-off Mass:                                   | is the lower of maximum structural take-off mass and the performance limited take-off mass. | is the higher of the maximum structural zero fuel mass and the performance limited takeoff mass.                      | the maximum structural take-off mass subject to any last minute mass changes.                | the maximum performance limited take-off mass subject to any last minute mass changes. |
| 8.  | The Operating Mass:  | is the lower of the structural mass and the performance limited mass                        | is the higher of the structural mass and the performance limited mass   | is the actual mass of the aircraft on take-off   | is the dry operating mass and the fuel load.   |
| 9.  | The Traffic Load:  | includes passenger masses and baggage masses but excludes any non-revenue load.             | includes passenger masses, baggage masses and cargo masses but excludes any nonrevenue load.                          | includes passenger masses, baggage masses, cargo masses and any non-revenue load.            | includes passenger masses, baggage masses and any non-revenue load but excludes cargo. |
| 10. | The Traffic Load is:   | The Zero Fuel Mass minus the Dry operating Mass   | The Take-off Mass minus the sum of the Dry Operating Mass and the total fuel load.                                    | The landing Mass minus the sum of the Dry Operating Mass and the mass of the remaining fuel. | all the above  |
| 11. | Certified Transport category aircraft with less than 10 seats: | may accept a verbal mass from or on behalf of each passenger.                               | estimate the total mass of the passengers and add a pre-determined constant to account for hand baggage and clothing. | may compute the actual mass of passengers and checked baggage.                               | all the above.   |
| 12. | When computing the   | Personal  | Infants must be   | Standard masses  | All of the above are   |

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|     | mass of passengers and baggage:   | belongings and hand baggage must be included   | classed as children if they occupy a seat  | include infants being carried by an adult  | correct.   |
| 13. | When computing the mass of checked baggage for an aircraft with twenty seats or more: | Mass is categorised by gender  | Mass is categorised by departure   | Mass is categorised by destination.  | None   |
| 14. | Mass and balance documentation:   | must be established prior to each flight and must include the aircraft commanders signature to signify acceptance of the document. | must enable the commander to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded. | must include the name of the person preparing the document and must be signed by the person supervising the loading to the effect that the load and its distribution is in accordance with the data on the document. | All the above  |
| 15. | Once the mass and balance documentation has been signed prior to flight:              | no load alterations are allowed.   | documented last minute changes to the load may be incorporated.  | the documentation is not signed prior to flight.   | acceptable last minute changes to the load must be documented. |
| 16. | Aircraft must be weighed:   | on initial entry into service and every four years after initial weigh   | if the mass and balance records have not been adjusted for alterations or modifications.   | whenever the cumulative changes to the dry operating mass exceed plus or minus 0.5% of the maximum landing mass and if the cumulative change in CG position exceeds 0.5% of the mean                                 | All of the above   |

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|     |   |   |  | aerodynamic chord.   |                                   |
| 17. | Aeroplane loading:  | must be performed under the supervision of qualified personnel and must be consistent with the data used for calculating the mass and balance.      | must comply with compartment dimension limitations and the maximum load per running metre  | must comply with the maximum mass per cargo compartment  | All of the above                  |
| 18. | An average dry operating mass and CG position may be used for a fleet or group of aeroplanes: | if they are of the same model and configuration providing the individual masses and CG positions meet specific tolerances specified in regulations. | providing appropriate corrections to mass and CG position are applied to aircraft within the fleet which have a physical, accurately accountable difference. | providing the dry operating mass of any aeroplane does not vary by more than 0.5% of the maximum structural landing mass of the fleet. | All of the above                  |
| 19. | LMC (Last Minute Change) of load Documents is:  | allowed if it is found of the last moment that CG is out of limit by 5%   | allowed if it is found that actual pay load is 5% more than the acceptable pay load.   | allowed for booth 'a' & 'b'  | not allowed for any of 'a' or 'b' |
| 20. | What effect has a centre of gravity close to the forward limit?                               | A better rate of climb capability   | A reduction in the specific fuel consumption   | A reduce rate of climb   | A decreased induced drag          |
| 21. | The DOM of an aeroplane is:   | TOM minus Operating Mass  | LM plus Trip Fuel  | Useful Load minus Operating Mass   | TOM minus Useful Load             |
| 22. | The TOM of a flight is:   | OM plus pay load  | LM plus trip fuel mass   | ZFM plus take off fuel   | All of the above                  |
| 23. | refer to CAP 696 (SEP 1) The CG is on the lower of the fwd CG                                 | at a mass of 2500 lb and moment of 185000 lb in   | at a moment of 175,000 lb in and a mass of 2350 lb   | at a moment of 192,000 lb in and a mass of 2600 lb   | all the above                     |

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|     | limits:   |  |  |   |   |
| 24. | Define the useful load:   | traffic load plus usable fuel mass                             | dry operating mass plus usable fuel load                   | traffic load plus dry operating mass  | that part of the traffic load which generates revenue                                       |
| 25. | The distance from the datum to the CG is:   | the index  | the moment   | the balance arm   | the station   |
| 26. | If the maximum structural landing mass is exceeded:   | The aircraft will be unable to get airborne                    | The undercarriage could collapse on landing                | No damage will occur providing the aircraft is within the regulated landing mass. | No damage will occur providing the aircraft is within the performance limited landing mass. |
| 27. | Due to a mistake in the load sheet the aeroplane is 1000 kg heavier than you believe it to be As a consequence: | V1, will be later  | Vmu will be later  | Vr will be later  | V1,Vmu,Vr will all occur earlier  |
| 28. | If the aeroplane was neutrally stable this would suggest that:  | the CG is forward  | the CG is in mid range                                     | the CG is on the rear limit   | the CG is behind the rear limit   |
| 29. | The CG position is:   | set by the pilot   | set by the manufacturer                                    | able to exist within a range  | fixed   |
| 30. | The CG datum has to be along the longitudinal axis:   | between the nose and the tail.                                 | between the leading and trailing edge of the MAC.          | but does not have to be between the nose and the tail.                            | at the fire   |
| 31. | The CG is   | the point on the aircraft where the datum is located.          | the point on the aircraft at which gravity appears to act. | the point on the aircraft from where the dihedral angle is measured.              | the point on the aircraft where the lift acts through.                                      |
| 32. | When determining the mass of fuel/oil and the value of the SG is not known, the value to                        | determined by the operator (and laid down in the aeroplane OPS | set out in OPS manual                                      | determined by the aviation authority  | determined by the pilot   |

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|     | use is:  | Manual. A pilot simply has to look it up)                          |  |   |  |
| 33. | In mass and balance terms, what is an index?   | A cut down version of a force                                      | A moment divided by a constant   | A moment divided by a mass  | A mass divided by a moment                                       |
| 34. | What is the zero fuel mass?  | MTOM minus fuel to destination minus fuel to alternative airfield. | Maximum allowable mass of the aircraft with no usable fuel on board.   | Operating mass minus the fuel load.                                 | Actual loaded mass of the aircraft with no usable fuel on board. |
| 35. | If an aeroplane comes into lands below its MSLM but above the PLLM for the arrival airfield: | A go-around might not be achievable.                               | Tyre temperature limits could be exceeded and Brake fade could occur.. | It might not have sufficient runway length in which to stop safely. | All the answers are correct                                      |
| 36. | The maximum aircraft mass excluding all usable fuel is:                                      | fixed and listed in the aircraft's Operations Manual               | variable and is set by the payload for the trip.                       | fixed by the physical size of the fuselage and cargo holds.         | variable and depends on the actual fuel load for the trip.       |
| 37. | What is the maximum mass an aeroplane can be loaded to before it moves under its own power?  | Maximum Structural Ramp mass                                       | Maximum Structural take-off mass                                       | Maximum Regulated Ramp Mass   | Maximum Regulated Take-off mass                                  |
| 38. | The weight of an aircraft in all flight conditions acts:                                     | parallel to the CG   | at right angles to the aeroplane's flight path                         | always through the MAC  | vertically downwards   |
| 39. | If the CG moves rearwards during flight:   | range will decrease  | range will increase  | stability will increase   | range will remain the same but stalling speed will decrease      |
| 40. | What is the effect of moving the CG from the front to the rear limit at constant             | Reduced optimum cruise range                                       | Reduced cruise range   | Increased cruise range  | Increased stall speed  |

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|     | altitude, CAS and temperature?   |  |  |  |  |
| 41. | Where does the mass act through when the aircraft is stationary on the ground?   | The centre of gravity                                | The main wheels  | It doesn't act through anywhere.                           | The aerodynamic centre                     |
| 42. | If an aircraft is weighed prior to entry into service who is responsible for doing the re-weigh to prepare the plane for operations? | The manufacturer.                                    | The operator   | The pilot  | The flight engineer.                       |
| 43. | Define Balance Arm   | $BA = \text{Mass} / \text{Moment}$                   | $BA = \text{Moment} / \text{Mass}$                         | $BA = \text{Mass} / \text{Distance}$                       | $BA = \text{Moment} / \text{Distance}$     |
| 44. | The weight of an aircraft fully equipped for a particular flight excluding all payload is called                                     | Operational weight                                   | Basic weight   | Operational empty weight                                   | Takeoff weight                             |
| 45. | Purpose of the weight and balance is to ensure   | Center of gravity within its limits                  | Weight within its maximum permissible empty weight         | Weight within its maximum permissible basic weight         | All above are correct                      |
| 46. | Individual aircraft should be weighed in an air conditioned hangar   | on entry into service and subsequently every 4 years | when the effects of modifications or repairs are not known | with the hangar doors closed and the air conditioning off. | all the above.                             |
| 47. | Which of the following would not affect the CG position?   | Cabin crew members performing their normal duties.   | Fuel consumption during flight.                            | Stabilator trim setting                                    | Mass added or removed at the neutral point |
| 48. | An aircraft is about to depart on an oceanic   | MZFM   | Obstacle clearance   | Maximum certified Take-off mass                            | Climb gradient                             |

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|     | sector from a high elevation airfield with an exceptionally long runway in the tropics at 1400 local time The regulated take-off mass is likely to be limited by |   |  |  |  |
| 49. | The CG datum has to be along the longitudinal axis:  | between the nose and the tail.  | between the leading and trailing edge of the MAC.                    | but does not have to be between the nose and the tail.   | at the fire wall.  |
| 50. | The useful load is:  | TOM - fuel mass   | BEM plus fuel load   | TOM minus the DOM  | TOM minus the operating mass   |
| 51. | Standard masses for baggage can be used for aircraft with:   | 9 seats or more   | 20 seats or more   | 30 seats or more   | less than 30 seats   |
| 52. | What is the zero fuel mass?  | MTOM minus fuel to destination minus fuel to alternative airfield.    | Maximum allowable mass of the aircraft with no usable fuel on board. | Operating mass minus the fuel load.  | Actual loaded mass of the aircraft with no usable fuel on board                            |
| 53. | Pay load of a flight is:   | ZFM minus DOM   | TOM minus operating mass   | LDM minus DOM minus remaining usable fuel.   | all the above.   |
| 54. | The accelerate-stop distance available is  | TORA + Clearway + Stopway   | TORA + Stopway   | TORA + Clearway  | TODA + Stopway   |
| 55. | The Service Ceiling is the pressure altitude where   | the rate of climb is zero   | the low speed and high speed buffet are coincident                   | the lift becomes less than the weight  | the rate of climb reaches a specified value  |
| 56. | The Gross performance of an aircraft is  | the average performance achieved by a number of aircraft of the type. | the minimum performance achieved by a number of aircraft of the type | the average performance achieved by a number of aircraft of the type reduced by a specified margin | the minimum performance achieved by the individual aircraft reduced by a specified margin. |

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| 57. | In relation to an aerodrome, a Balanced Field is when             | TODA = TORA  | TODA = ASDA  | TORA = ASDA  | The runway is usable in both directions.                                     |
| 58. | Which of the following statements is correct                      | Gross gradient is less than net gradient                                     | Gross take-off distance is less than net take-off distance                     | Gross landing distance is greater than net landing distance                    | Gross acceleration is less than net acceleration                             |
| 59. | The load factor is the ratio of                                   | Lift : Drag at the optimum angle of attack                                   | Weight : Maximum Authorised Weight   | Thrust : Weight  | Total lift : Weight  |
| 60. | The forces acting on an aircraft during the take-off run are      | Lift, thrust and drag  | Lift, weight, aerodynamic drag, thrust   | Lift, weight, aerodynamic drag, wheel drag, thrust                             | Weight, thrust, drag.  |
| 61. | A "flat rated" jet engine will give                               | a constant thrust for temperatures below a cut-off value                     | a constant thrust for temperatures above a cut-off value                       | decreasing thrust as temperature decreases below a cut-off value               | increasing thrust as temperature increases above a cut-off value             |
| 62. | The rolling friction drag of an aircraft's wheels during take-off | Depends on the aircraft weight and is constant during take-off               | Depends on the total load on the wheels and decreases during take-off          | Depends on the wheel bearing friction and increases with speed                 | Depends on tyre distortion and increases with speed                          |
| 63. | The take-off distance required will increase as a result of       | increasing mass, reducing flap below the optimum setting, increasing density | decreasing mass, increasing flap above the optimum setting, increasing density | decreasing mass, increasing flap above the optimum setting, decreasing density | increasing mass, reducing flap below the optimum setting, decreasing density |
| 64. | The effect of increased aircraft mass on the climb gradient is    | decrease due to increased drag   | increase due to increased lift required  | decrease due to increased drag and reduced ratio of excess thrust to weight    | increase due to increased speed required at optimum angle of attack          |
| 65. | The speeds $V_X$ and $V_Y$ are, respectively                      | Maximum achievable speed with max.   | Speed for best rate of climb and speed for best angle of climb                 | Max. speed with flap extended and max. speed with gear                         | Speed for best angle of climb and speed for best rate of climb               |

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|     |   | continuous thrust and maximum take-off thrust  |   | extended  |  |
| 66. | The rate of climb depends on  | the excess thrust available  | the excess power available  | the excess lift available   | the CL <sub>max</sub> of the wing.   |
| 67. | The speed to give the maximum rate of climb will be                     | always the same as the speed for best angle of climb.  | as close to the stalling speed as possible                                  | higher than the speed for best angle of climb                               | lower than the speed for best angle of climb.  |
| 68. | The maximum rate of descent will occur                                  | at a speed close to the stalling speed with all permissible drag producing devices deployed. | at VMO with all permissible drag producing devices deployed.                | at VMO with the aircraft in the clean configuration.                        | at a speed corresponding to maximum L :D with the aircraft in the clean configuration. |
| 69. | The climb gradient will be reduced by                                   | high mass, low temperature, high flap angle  | high pressure altitude, turning flight, low temperature                     | high temperature, high pressure altitude, contaminated airframe.            | low pressure altitude, high mass, high temperature.                                    |
| 70. | When an aircraft reaches its service ceiling                            | the excess power will be zero  | it will have a small positive rate of climb                                 | the rate of climb will be zero  | the lift will be insufficient to support the weight.                                   |
| 71. | In a power-off glide, an increase in aircraft mass will                 | increase the glide angle and increase the speed for minimum glide angle.                     | not affect the glide angle, but increase the speed for minimum glide angle. | increase the glide angle, but not affect the speed for minimum glide angle. | not affect the glide angle, and not affect the speed for minimum glide angle.          |
| 72. | For a jet aircraft, the speed to give the maximum rate of climb will be | the speed corresponding to maximum L :D  | the speed corresponding to minimum L:D                                      | a speed greater than that for maximum L :D                                  | a speed less than that for maximum L :D  |
| 73. | The minimum total drag of an aircraft in level flight occurs            | when the induced drag is a minimum   | when the parasite drag is a minimum   | when CL: CD is a maximum  | when CDT <sub>Total</sub> is a minimum   |

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| 74. | For a jet aircraft the maximum achievable True Air Speed will occur                                | at sea level  | at the absolute ceiling   | at the same altitude that the maximum Indicated Air Speed occurs                   | at high altitude but below the absolute ceiling.                                      |
| 75. | The specific fuel consumption (sf  | c) for a jet engine is  | a) the miles flown per kilogram of fuel used                            | the fuel flow per unit of thrust   | the fuel flow at maximum take off thrust  |
| 76. | The tangent from the origin to the Power ~ Speed curve will give for a jet aircraft the speed for: | maximum range   | minimum drag  | minimum power  | maximum speed   |
| 77. | If the mass of an aircraft is increased  | the range is reduced and the altitude for maximum range is higher     | the range is increased and the altitude for maximum range is higher     | the range is reduced and the altitude for maximum range is lower                   | the range is increased and the altitude for maximum range is lower.                   |
| 78. | To obtain the maximum range for a jet aircraft it should be flown                                  | at the altitude which is the optimum for the mass at the top of climb | at an increasing altitude as the mass decreases                         | at a decreasing altitude as the mass decreases                                     | at the altitude which is the optimum for the mass at the top of descent.              |
| 79. | If the aircraft's C.G.is moved into a more forward position  | the drag and lift will be increased and the range will be increased   | the drag and lift will be increased and the range will be decreased     | the drag will be increased, lift will be decreased and the range will be decreased | the drag will be decreased, the lift will be increased and the range will be increase |
| 80. | The specific range (S R) is  | the distance that the aircraft would fly with full fuel               | the distance that the aircraft would fly without using the reserve fuel | the distance that the aircraft would fly per kilogram of fuel                      | the distance that the aircraft could fly with the capacity payload                    |
| 81. | Maximum range for a jet aircraft will occur  | at sea level  | at the absolute ceiling   | at the altitude where the maximum True Air Speed is achieved                       | at a high altitude, but below the absolute ceiling                                    |

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| 82. | Endurance for a jet aircraft is a maximum   | at low altitude, and increases with increasing aircraft mass   | at low altitude, and decreases with increasing aircraft mass               | at high altitude, and increases with increasing aircraft mass  | at high altitude, and decreases with increasing aircraft mass                   |
| 83. | For a jet aircraft selected level for Long Range Cruise (LRC) is at the:                                    | absolute ceiling   | high altitude  | high altitude level below absolute ceiling   | above the absolute ceiling  |
| 84. | The landing distance required will be increased as a result of all of the following                         | increased temperature, increased pressure altitude, uphill runway slope.   | increased temperature, increased pressure altitude, downhill runway slope. | decreased temperature, decreased pressure altitude, uphill runway slope                                    | increased temperature, decreased pressure altitude, downhill runway slope.      |
| 85. | When calculating the landing distance, what percentage of the reported wind component must be allowed for ? | 50% of a headwind, and 150% of a tailwind.   | 100% of a headwind, and 100% of a tailwind.                                | 50% of a headwind, and 100% of a tailwind.   | 150% of a headwind, and 50% of a tailwind                                       |
| 86. | Which of the following statements is correct ?  | A reduced flap setting for landing will give a shorter landing distance, as a result of reduced lift and greater load on the wheels. | Wheel braking is most effective when the wheels are locked.                | Landing distance required on a grass runway will be shorter than on tarmac because of the rougher surface. | Deployment of lift dumpers will increase the effectiveness of the wheel brakes. |
| 87. | Which of the following statements relating to hydroplaning is true ?  | Hydroplaning can only occur if the depth of the contaminant exceeds 3 mm.  | When the wheel begins to hydroplane the wheel drag decreases.              | Hydroplaning can only occur if the brakes are applied and releasing the brakes will stop the hydroplaning. | Hydroplaning can be delayed by reducing the tyre pressure.                      |
| 88. | Decreasing air density  | increased landing  | reduced landing  | increased landing  | reduced landing   |

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|     | will give   | distance due to increased TAS, and increased idling thrust.                            | distance due to reduced TAS, and reduced idling thrust.                   | distance due to increased TAS, and reduced idling thrust.                            | distance due to reduced TAS, and increased idling thrust.  |
| 89. | Dynamic hydroplaning is likely to occur as a result of a combination of   | high speed, low tyre pressure, high contaminant density.                               | high speed, high tyre pressure, high contaminant density.                 | low speed, high tyre pressure, low contaminant density.                              | high speed, high tyre pressure, low contaminant density.   |
| 90. | The effect of increasing aircraft mass on the landing distance is :   | screen speed increases, brake drag decreases, landing distance increases.              | screen speed increases, brake drag increases, landing distance increases. | screen speed decreases, brake drag increases, landing distance decreases.            | screen speed decreases, brake drag decreases, landing distance decreases.                          |
| 91. | Which of the following statements regarding reverse thrust is true ?  | The braking effect of reverse thrust is greatest at low speeds.                        | Reverse thrust may be used for landing but not for an aborted take off.   | Reverse thrust may not be used on a slippery runway.                                 | At low speeds re-ingestion of the jet efflux may occur, causing over-heating.                      |
| 92. | Given that control requirements are adequate, the speed at the screen must not be less than                         | 10% above the stall speed  | 20% above the stall speed   | 25% above the stall speed  | 30% above the stall speed CAP 698 Figure 2.1   |
| 93. | The take off climb gradient requirement for a single engine Class B aircraft is                                     | 4.0% with maximum continuous power and flaps up  | 2.5% with maximum take off power and flaps in the take off position       | 4.0% with maximum take off power and flaps in the take off position                  | a gradient of not less than zero with maximum continuous power and flaps in the take off position. |
| 94. | When assessing the en-route performance, it may not be assumed that the aircraft is flying at an altitude exceeding | the altitude at which the rate of climb is 300 ft./min. with maximum continuous power. | the absolute ceiling with maximum continuous power.                       | the altitude at which the rate of climb is 300 ft./min. with maximum take-off power. | the altitude at which a gradient of 0.5% is achieved with maximum continuous power.                |
| 95. | Given that the control  | 20% above the  | 30% above the   | 30% above the  | 50% above the  |

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|      | requirement is met, the speed at the 50 ft screen must not be less than            | stalling speed with landing flap   | stalling speed with flaps up  | stalling speed with landing flap  | stalling speed with flaps up.  |
| 96.  | The landing distance required must not exceed                                      | 70% of the landing distance available at a destination aerodrome, and 60% of the landing distance available at an alternate aerodrome. | 60% of the landing distance available at a destination aerodrome, and 70% of the landing distance available at an alternate aerodrome.      | 60% of the landing distance available at destination and alternate aerodromes.  | 70% of the landing distance available at destination and alternate aerodromes.   |
| 97.  | If the runway is wet, the landing distance required for a dry runway               | may be used unfactored   | must be increased by 50%  | must be increased by 15%  | must be increased by 5%  |
| 98.  | Which of the following statements is true  | The landing distance required is not affected by temperature.  | If the runway has an uphill slope of 1.0% , the landing distance required should be decreased by 5%   | For planning purposes the landing distance required should be based on the I.S.A. temperature appropriate to the pressure altitude. | The landing distance required is not affected by weight as the effect of the increased speed is cancelled by the increased braking effect. |
| 99.  | Which of the following statements is true with respect to the take off flight path | The angle of bank may not be assumed to exceed 15° after the 50 ft. screen   | If the change of heading exceeds 15° , obstacles at a lateral distance from the track in IMC of greater than 600 m. need not be considered. | Obstacles must be cleared by at least 35 ft.  | Reported winds are not required to be factored   |
| 100. | To achieve the maximum possible TAS  | at 14500 ft. with 100% power, and  | at 14500 ft. with 100% power, and   | at 17200 ft. with 75% power, and would  | at 12000 ft. with 100% power, and  |

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|      | in ISA conditions, the aircraft should be flown   | would achieve 188 kts.   | would achieve 196 kts.  | achieve 193 kts.   | would achieve 196 kts.  |
| 101. | The balked landing climb requirement must be met in the following configuration                               | Gear down, landing flap, take off power with one engine inoperative. | Gear down, landing flap, take off power on all engines.         | Gear down, approach flap, maximum continuous power on all engines.   | Gear up, approach flap, maximum continuous power on all engines.  |
| 102. | The maximum landing weight may be determined by the landing climb gradient requirement This is to ensure that | there is adequate obstacle clearance during approach.                | the landing distance is not exceeded.                           | the climb performance is adequate in the event of a go-around.   | maneuverability is adequate.  |
| 103. | The speed $V_{MU}$ is   | the maximum speed for flight with the undercarriage extended.        | the maximum speed at which the aircraft should become airborne. | the minimum speed at which the aircraft can safely lift off the ground.  | the minimum speed at which the elevators can rotate the aircraft until the tail bumper is in contact with the runway. |
| 104. | The speed $V_1$ is:   | the stalling speed with the flaps in a prescribed position.          | the critical speed for engine failure during take off.          | the speed at which, with the critical engine inoperative, the TODR will not exceed the TODA, the TORR will not exceed the TORA. And the ASDR will not exceed the ASDA. | the speed at which rotation to the unstick attitude is initiate   |
| 105. | When calculating the Accelerate-Stop Distance Required, braking is assumed to begin                           | at the speed at which the engine fails.                              | at the speed $V_1$  | at the speed reached 2 seconds after the engine failure has occurred   | at the speed reached after 2 seconds after $V_1$ , with all engines operating, or with one engine                     |

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|      |   |  |   |   | inoperative, whichever is limiting.   |
| 106. | Select the correct sequence of speeds   | VMCG VEF V1 VR   | VMCG VEF VR V1  | VEF V1 VMCG VR  | VMCG V1 VEF VR  |
| 107. | Which of the following statements is correct  | If the aircraft is rotated before VR to the normal attitude, the take off distance required will be reduced. | If the aircraft is rotated before VR to a greater than normal attitude, the take off distance required will be reduced. | If the aircraft is rotated after VR to the normal attitude, the take off distance required will be increased. | If the aircraft is rotated after VR to a greater than normal attitude, the take off distance will be reduce |
| 108. | The Balanced Field Length for an aircraft is when, in the event of an engine failure during take off      | the distance to accelerate is equal to the distance to stop.   | the take off distance required is equal to the accelerate- stop distance required                                       | the take off run required is equal to the accelerate-stop distance required                                   | the take off distance required is equal to the take off run require   |
| 109. | If the balanced field V1 exceeds V_MBE  | V_MBE must be increased to V1 and the field length required will be greater than the balanced field length.  | V1 must be reduced to V_MBE and the field length required will be greater than the balanced field length.               | V1 must be reduced to V_MBEE and the field length required will be less than the balanced field length        | V_MBE must be increased to V1 and the field length required will be less than the balanced field length.    |
| 110. | If the balanced field length required for a given weight is less than the balanced field length available | Take off may not be made at that weight.   | the V1 must be increased above the balanced field V1  | the V1 must be decreased below the balanced field V1  | there will be a range of V1 speed available.  |
| 111. | A runway is considered to be contaminated when  | more than 50% of the runway surface is covered by more than a 5 mm. depth of water.                          | more than 25% of the runway surface is covered by more than a 2.5 mm. depth of water.                                   | more than 25% of the runway surface is covered by more than a 3 mm. depth of water.                           | more than 30% of the runway surface is covered by more than a 3 mm. depth of water.                         |

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| 112. | The aquaplaning speed  | is not affected by changes of contaminant density, but increases if tyre pressure increases. | is not affected by changes of contaminant density, but increases if tyre pressure decreases. | increases if contaminant density increases, and tyre pressure decreases.   | decreases if contaminant density increases, and tyre pressure decreases.                                   |
| 113. | The effect of increasing the V1 speed for a given take off mass and aerodrome conditions is  | the climb gradient increases and the take off distance decreases.                            | the climb gradient decreases and the take off distance increases.                            | the climb gradient increases and the take off distance increases.  | the climb gradient decreases and the take off distance decreases.  |
| 114. | Which of the following statements is correct :   | The increased V1 procedure may be used with a reduced thrust take off.                       | Reduced thrust may be used for take off if the runway is contaminated.                       | The increased V2 procedure would only be used if the climb limited take off mass is less than the field length limited mass. | Reduced thrust may be used for take off if the anti skid system is inoperative. Refer to CAP 698 Fig. 4.17 |
| 115. | The first segment of the take off flight path ends   | when the flaps and landing gear are fully retracted.   | when the landing gear is retracted and the power reduced to maximum continuous.              | when the landing gear is fully retracted.  | when the aircraft reaches a height of 400 ft.  |
| 116. | For the third segment of the take off flight path, which of the following combinations of speed, power, flap setting, and landing gear position is correct ? Speed Power Flap Gear | V2 Take off Take off Retracted   | Accelerating Take off Being retracted Retracted  | V1 Max.Continuous Being retracted Retracted  | Accelerating Take off Take off Down  |
| 117. | The second segment gradient requirement for a two engined aircraft is 2.4If the V2   | 150 ft./min.   | 240 ft./min.   | 360 ft./min.   | 625 ft./min.   |

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|      | speed is 150 knots IAS<br>the rate of climb at sea level ISA when operating at the W.A.Tlimit would be approximately          |   |   |  |   |
| 118. | The climb gradient requirement determines a maximum weight for take off This ensures that:                                    | the take off distance available will not be exceeded. | there will be adequate obstacle clearance after take off.                               | in the event of an engine failure on take off a minimum climb gradient will be achievable. | in the event of an engine failure on take off adequate control will be available. |
| 119. | For an aircraft climbing at a constant Indicated Air Speed, the (i) True airspeed and (ii) the Mach number will : (i)<br>(ii) | increase increase                                     | increase decrease   | decrease increase  | decrease decrease   |
| 120. | An aircraft is descending at a constant Mach numberThe (i) IAS and(ii) the TAS will : (i)<br>(ii)                             | increase decrease                                     | decrease increase   | increase increase  | decrease decrease   |
| 121. | The Long Range Cruise procedure is to fly :   | at the speed which gives the maximum possible range   | at a speed above the maximum range speed, which gives 99% of the maximum possible range | at a speed below the maximum range speed, which gives 95% of the maximum range             | at a speed which gives the minimum fuel flow.                                     |
| 122. | It may be preferable to cruise at an altitude other than the optimum altitude for maximum range:                              | because a lower altitude may give a higher VMO        | because a higher altitude may give a larger buffet margin                               | if a lower altitude has a more favourable wind   | because a higher altitude may give a higher Specific Range                        |
| 123. | Which of the following  | Maximum cruise  | Maximum achievable  | Maximum cruise   | Maximum cruise  |

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|      | statements is correct with regard to cruising speed.  | speed is always limited by maximum cruise thrust available.                              | cruise speed is not affected by weight.   | speed may be limited by maximum cruise thrust available, MMO or VMO  | speed is always limited by a Mach number limitation   |
| 124. | Which of the following statements is correct with regard to the en route regulations for twin engine aircraft after engine failure :  | If the flight is continued to a landing aerodrome, obstacles must be cleared by 1000 ft. | the gross gradient must be reduced by 0.9%  | the effect of fuel jettisoning on the aircraft weight is not permitted.  | the aircraft must have a positive climb gradient at 1500 ft. above the landing aerodrome  |
| 125. | To meet the balked landing requirements an aircraft must achieve a climb gradient of :  | 3.2% in the landing configuration with the critical engine inoperative.                  | 2.1 % in the approach configuration with all engines operating.                   | 3.2% in the landing configuration with all engines operating.  | 2.1 % in the landing configuration with all engines operating.  |
| 126. | For a class A jet aircraft, the landing distance required must not exceed   | 50% of the landing distance available  | 60% of the landing distance available   | 70% of the landing distance available  | 90% of the landing distance available.  |
| 127. | Which of the following statement is true with regard to runway slope in the calculation of landing weight:  | Slope is only taken into account if it is downhill                                       | Slope should be taken into account if it exceeds 1.0%                             | Slope should be taken into account if it exceeds 2.0%  | Slope is never taken into account.  |
| 128. | Landing is planned at an aerodrome with a single runway. At the expected arrival weight the landing distance available is adequate with the forecast wind, but inadequate in still air: | Weight must be reduced until the still air requirement is met.                           | The screen height may be reduced to 30 ft. if approved by the aerodrome authority | the aircraft may be despatched at the original weight if an alternate at which all the landing requirements are met, is available. | the aircraft may be despatched at the original weight if two alternates at which all the landing requirements are met, are available. |
| 129. | What happens to the   | Both remain  | Vx remains constant   | Vx increases and Vy  | Vx remains constant   |

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|      | speed for $V_x$ and $V_y$ with increasing altitude?  | constant.   | and $V_y$ increases.  | remains constant.   | and $V_y$ decreases.  |
| 130. | The effect of a contaminated runway on the field limit mass  | Decreased weight, increased $V_1$ , increased $V_R$ .             | Decreased weight, same $V_1$ , increased $V_R$ .                          | Decreased weight, same $V_1$ , same $V_R$ .                     | Decreased weight, decreased $V_1$ , decreased $V_R$ .                           |
| 131. | When operating with anti-skid inoperative:   | Both landing and take off performance will be affected.           | Only landing performance will be affected.                                | Only take off performance will be affected.                     | Neither take off or landing performance will be affected                        |
| 132. | When comparing $V_x$ to $V_y$ :  | $V_x$ will always be greater than $V_y$ .                         | $V_y$ will always be greater than or equal to $V_x$ .                     | $V_y$ will always be greater than $V_x$ .                       | $V_x$ will sometimes be greater than $V_y$ , but sometimes be less than $V_y$ . |
| 133. | With which conditions would one expect $V_{mc}$ to be the lowest?                                    | Cold temp, low altitude, low humidity.                            | Hot temp, low pressure altitude, high humidity.                           | Hot temp, high pressure altitude, high humidity.                | Cold temp, high altitude, low humidity.   |
| 134. | Give the correct order for the following:  | $V_{mcg}$ , $V_R$ , $V_1$ , $V_2$                                 | $V_{mcg}$ , $V_1$ , $V_R$ , $V_2$   | $V_1$ , $V_{mcg}$ , $V_R$ , $V_2$                               | $V_{mcg}$ , $V_1$ , $V_{mca}$ , $V_R$ , $V_2$                                   |
| 135. | If the C of G moves aft from the most forward position:  | The range and the fuel consumption will increase.                 | The range and the fuel consumption will decrease.                         | The range will increase and the fuel consumption will decrease. | The range will decrease and the fuel consumption will increase.                 |
| 136. | When approaching a wet runway, with the risk of hydroplaning, what technique should the pilot adapt? | Positive touch down, full reverse and brakes as soon as possible. | Smoothest possible touch down, full reverse and only brakes below $V_P$ . | Positive touch down, full reverse and only brakes below $V_P$ . | Normal landing, full reverse and brakes at $V_P$ .                              |
| 137. | Give the correct sequence:   | $V_s$ , $V_x$ , $V_y$   | $V_x$ , $V_s$ , $V_y$   | $V_s$ , max range speed, max endurance speed.                   | Max endurance speed, $V_s$ , Max range speed                                    |
| 138. | Flying at an altitude close to coffin corner gives:  | Max speed.  | Less manoeuvrability.   | Greater 1 engine inoperative Range.                             | Greater 1 engine inoperative Endurance.   |

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| 139. | Ignoring the effect of compressibility, what would CL do with an increase in altitude?         | Increase.   | Decrease.  | Remain the same.  | Increase, then decrease.  |
| 140. | The main reason for using the stepped climb technique is to:                                   | Decrease sector times   | Increase endurance.  | Adhere to ATC procedures                                    | Increase range  |
| 141. | When take off mass is limited by VMBE, an increase in the uphill slope will:                   | Have no affect.   | Require a decrease in the mass.                                      | Allow an increase in the mass.                              | Decrease the TODR.  |
| 142. | Reference point zero refers to:  | Point where the aircraft lifts off the ground.                          | Point where the aircraft reaches V2.                                 | Point where the aircraft reaches 35ft.                      | Point where gear is selected up.  |
| 143. | To maintain the same angle of attack and altitude at a higher gross weight an aeroplane needs: | Less airspeed and same power.   | Same airspeed.   | More airspeed and less power.                               | More airspeed and more power.   |
| 144. | The coefficient of lift may be increased by lowering the flaps or:                             | Increase CAS.   | Reduce nose up elevator trim.  | Increase angle of attack.                                   | Increase TAS.   |
| 145. | Which conditions are most suited to a selection of lower flap for take off?                    | Low airfield elevation, close obstacles, long runway, high temperature. | Low airfield elevation, no obstacles, short runway, low temperature. | High elevation, no obstacles short runway, low temperature. | High airfield elevations, distant obstacles, long runway, high ambient temperature. |
| 146. | If the flap setting is changed from 10 degrees to 20 degrees V2 will:                          | Not change  | Decrease if not limited to Vmca                                      | Increase  | Increase or decrease depending on weight  |
| 147. | For a turbojet aeroplane the second  | Accelerating from V2 to flap  | Landing gear is fully retracted.                                     | Flap retraction begins.                                     | Flaps are fully retracte  |

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|      | segment of the climb begins when:  | retraction speed begins.  |   |  |  |
| 148. | For a turbojet aeroplane the third segment of climb begins when:   | Acceleration to flap retraction speed begins (min 400ft ).            | Landing gear is fully retracted.            | Acceleration from VLOF to V2 begins.                     | Flaps are fully retracte   |
| 149. | The speed for minimum power required in a turbojet will be:  | Slower than the speed for minimum drag.                               | Faster than the speed for minimum drag.     | Slower in a climb and faster in the decent.              | Same as speed for minimum drag.  |
| 150. | What landing distance requirements need to be met at an alternate airfield compared to a destination airfield for a turboprop? | Less than destination.  | More than destination.                      | Same as destination.                                     | None applicable.   |
| 151. | Absolute Ceiling is defined by:  | Altitude where theoretical rate of climb is zero.                     | Altitude at which rate of climb is 100 fpm. | Altitude obtained when using lowest steady flight speed. | Altitude where low speed Buffet and high speed Buffet speeds are coincident. |
| 152. | Vr for a jet aircraft must be faster than, the greater of:   | 1.05 Vmca and V1  | Vmca and 1.1 V1                             | VMBE and V1  | V 1 and 1.1 Vmca   |
| 153. | Landing on a runway with 5 mm wet snow will:   | Increase landing distance   | Decrease landing distance                   | Not affect the landing distance                          | Give a slighty reduced landing disntace, due to increased impingement drag   |
| 154. | A balanced field length is when:   | Distance taken to accelerate to V1 and distance to stop are identical | TORA X 1.5                                  | V1 =VR   | ASDA equals TODA   |

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| 155. | Increase ambient temperature will result in:                              | Increased field length limited mass.  | Decrease maximum brake energy limited mass.                             | Increase climb limited mass.                                    | Increased obstacle limited mass.   |
| 156. | Pitch angle during decent at a constant mach number will:                 | Increase.   | Decrease.   | Increase at first then decrease.                                | Stay constant.   |
| 157. | At maximum range speed in a turbojet the angle of attack is:              | Same as L/D max.  | Less than L/D max.  | Maximum.  | More than L/D max.   |
| 158. | Climbing to cruise altitude with a headwind will:                         | Increase time to climb.   | Decrease ground distance covered to clim                                | Decreased time to climb.  | Increased ground distance covered to climb.                                    |
| 159. | Requirements for the third segment of climb are:                          | Minimum acceleration altitude for one engine inoperative should be used.          | There is no climb gradient requirement during acceleration phase.       | Level acceleration with an equivalent gradient of 1.2%.         | Legal minimum altitude for acceleration is 1500'.                              |
| 160. | Why is there a requirement for an approach climb gradient?                | So that an aircraft falling below the glide path will be able to re-intercept it. | Adequate performance for a go-around in the event of an engine failure. | So that the aircraft will not stall when full flap is selected. | To maintain minimum altitude on the approach.                                  |
| 161. | The drift down is a procedure applied:                                    | After aircraft depressurization.  | For a visual approach to a VASI.  | For an instrument approach at an airfield without an ILS.       | When the engine fails above the operating altitude for one engine inoperative. |
| 162. | Take off run required for a jet aircraft, with one engine inoperative is: | Brake release point to midpoint between VLOF and 35 ft.                           | Brake release point to 3541.  | Brake release point to 15 ft.                                   | The same as for all engines.   |
| 163. | A jet aircraft's maximum altitude is usually limited by:                  | It's certification maximum altitude.  | It's pressurisation maximum altitude.                                   | The altitude at which low and high-speed buffet will occur.     | Thrust limits.   |

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| 164. | With respect to en-route diversions (using drift down graph), if you believe that you will not clear an obstacle do you:   | Drift down to clearance height and then start to jettison fuel. | Jettison fuel from the beginning of the drift down.                 | Assess remaining fuel requirements, then jettison fuel as soon as possible. | Fly slight faster.   |
| 165. | What factors would cause V2 to be limited by Vmca?   | Flaps at high settings.   | With high pressure.   | With low temperature.   | All the above.   |
| 166. | If not VMBE or Vmcglimited, what would V1 be limited by ?  | V2  | Vmga  | VR  | VMU  |
| 167. | What procedure is likely to require V1 to be reduced ?   | Improved climb produre.   | Reduced thrust take off.  | When ASDA is greater than TODA.   | Take off with anti-skid inoperative.                                   |
| 168. | Which of the following is not affected by a tailwind   | Landing climb limit mass.                                       | Obstacle limit mass.  | VMBE.   | Tyre speed limit mass.   |
| 169. | When flying an aircraft on the back of the drag curve, maintaining a slower speed (but still faster than VS) would require | More flap.  | Less thrust due to less parasite drag.                              | More thrust.  | No change.   |
| 170. | When flying in a headwind, the speed for max range should be   | slightly decreased.   | slightly increased.   | unchanged.  | should be increased, or decreased depending on the strength of the win |
| 171. | VLO is defined as :  | Actual speed that the aircraft lifts off the ground.            | Minimum possible speed that the aircraft could lift off the ground. | The maximum speed for landing gear operation.                               | The long range cruise spee   |

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| 172. | When flying at the optimum range altitude, over time the                  | Fuel consumption gradually decreases.      | Fuel consumption gradually increases.                | Fuel consumption initially decreases then gradually increases.                       | Fuel consumption remains constant.   |
| 173. | What happens to the field limited take off mass with runway slope ?       | It increases with a downhill slope.        | It is unaffected by runway slope.                    | It decreases with a downhill slope.  | It increases with an uphill slope.   |
| 174. | With regards to the optimum altitude during the cruise, the aircraft is   | always flown at the optimum altitude.      | always flown 2000 ft below the optimum altitude.     | may be flown above or below the optimum altitude, but never at the optimum altitude. | flown as close to the optimum altitude as ATC will allow.                                      |
| 175. | A tailwind on take off will not affect                                    | climb limit mass.                          | obstacle clearance.                                  | field limit mass.  | VMBE   |
| 176. | If a jet engine fails during take off, before V1                          | the take off can be continued or aborted.  | the take off should be aborted.                      | the take off should be continued.  | the take off may be continued if aircraft speed is, above VMCG and lies between VGO and VSTOP. |
| 177. | In a balanced turn load factor is dependant on                            | radius of turn and aircraft weight.        | TAS and bank angle.                                  | radius of turn and bank angle.   | Bank angle only.   |
| 178. | When gliding into a headwind airspeed should be                           | reduce airspeed to gust penetration speed. | the same as the max. range glide speed in still air. | lower than the max. range glide speed in still air.                                  | higher than the max. range glide speed in still air.   |
| 179. | Which denotes the stall speed in the landing configuration ?              | VSO.                                       | VS 1.  | VS.  | VS 1G.   |
| 180. | When descending below the optimum altitude at the long range cruise speed | Mach no. decreases.                        | TAS increases.                                       | Mach no. remains constant.   | Mach no. increases.  |
| 181. | During aircraft certification, the value                                  | Nose wheel steering does not               | VMCG must be valid in both wet and dry               | Nose wheel steering does not work after  | The aircraft may be operated even if the   |

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|      | of VMCG is found with nose wheel steering inoperative This is because                        | affect VMCG.  | conditions.   | an engine failure.  | nose wheel steering is inoperative.                                       |
| 182. | Which is true regarding a balanced field ?   | Provides largest gap between net and gross margins. | Provides minimum field length required in the case of an engine failure.        | Take off distance will always be more than stopping distance. | Distances will remain equal, even if engine failure speed is change       |
| 183. | Climbing in the troposphere at a constant TAS  | Mach no. increases.                                 | Mach no. decreases.   | CAS increases.  | IAS increases.  |
| 184. | Out of the four forces acting on the aircraft in flight, what balances thrust in the climb ? | Drag.   | Weight  | $W \sin \theta$   | $Drag + W \sin \theta$  |
| 185. | With a downward sloping runway   | V1 will increase.                                   | V1 will decrease.   | VR will increase.   | VR will decrease.   |
| 186. | The reduced thrust take off procedure may not be used when                                   | Runway wet.   | After dark.   | Temperature varies by more than 10°C from ISA.                | Anti-skid unserviceable.  |
| 187. | Prior to take off the brake temperature needs to be checked, because                         | they indicate the state of the fusible plugs.       | if the brakes are already hot, they may fade / overheat during a RTO.           | they would work better if they are warm.                      | they may need to be warmed up to prevent them from cracking during a RTO. |
| 188. | What happens to the speeds, VX and VY, when lowering the aircraft's undercarriage'?          | VX increases, VY decreases.                         | VX decreases, VY decreases.   | VX increases, VY increases.                                   | VX decreases, VY increases.   |
| 189. | Maximum Endurance :  | can be achieved in level unaccelerated flight with  | can be achieved by flying at the best rate of climb speed in straight and level | can be achieved in a steady climb.                            | can be achieved by flying at the absolute ceiling.                        |

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|      |   | minimum fuel consumption.   | flight.  |   |   |
| 190. | What factors affect descent angle in a glide ?  | Configuration and altitude.   | Configuration and angle of attack.                               | Mass and attitude.                                      | Mass and configuration.   |
| 191. | What is meant by balanced field available ?   | TORA = TODA   | ASDA = ASDR and TODA = TODR                                      | TODA = ASDA   | TORA = ASDA   |
| 192. | Which of the following will not decrease the value of VS?   | The C of G in an aft position within the C of G envelope.           | Increased altitude.  | Decreased weight.                                       | Increased flap setting.   |
| 193. | What effect does an increase in weight have on V1 ?   | It will cause it to increase.                                       | It will cause it to decrease.                                    | It will have no effect.                                 | It will cause it to decrease by the same percentage as the weight increase. |
| 194. | VR for a Class A aeroplane must not be less than:   | 10 % above VMU.   | 5 % above VMCA.  | 5 % above VMCG.   | 10 % above VMCA.  |
| 195. | The maximum induced drag occurs at a speed of   | VMD.  | VMP.   | VSO.  | VATO.   |
| 196. | VMD for a jet aeroplane is approximately equal to   | 1.3 VS.   | 1.7 VS.  | 1.6 VS.   | 2.1 VS.   |
| 197. | The effect an increase of weight has on the value of stalling speed (IAS) is that VS .                                  | increases.  | decreases.   | remains constant.                                       | increases or decreases, depending on the amount of weight increase.         |
| 198. | Which one of the following statements is true concerning the effect of changes of ambient temperature on an aeroplane's | An increase will cause a decrease in the landing distance required. | An increase will cause a decrease in take off distance required. | A decrease will cause an increase in the climb gradient | A decrease will cause an increase in the take off ground run.               |

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|      | performance, assuming all other performance parameters remain constant'?                        |   |   |   |   |
| 199. | For a turbojet aircraft planning to land on a wet runway, the landing distance available        | may be less than 15% greater than the dry landing distance if the flight manual gives specific data for a wet runway. | may be less than 15% greater than the dry landing distance if all reverse thrust systems are operative. | may be less than 15% greater than the dry landing distance if permission is obtained from the relevant aerodrome authority. | must always be at least 15% greater than the dry landing distance.      |
| 200. | In relation to runway strength, the ACN   | may not exceed 90% of the PCN.  | may exceed the PCN by up to 10%.  | may never exceed the PCN.   | may exceed the PCN by a factor of 2.                                    |
| 201. | An aircraft is climbing in a standard atmosphere above the tropopause at a constant Mach number | the IAS decreases and TAS remain constant.  | the IAS and TAS remain constant.  | the IAS decreases and TAS decreases.  | the IAS remains constant and TAS increases.                             |
| 202. | Optimum altitude can be defined as  | the highest permissible altitude for an aeroplane type.   | the altitude at which an aeroplane attains the maximum specific air range.                              | the altitude at which the ground speed is greatest.   | the altitude at which specific fuel consumption is highest.             |
| 203. | If an aircraft is descending at a constant Mach number  | the IAS will increase and the margin to low speed buffet will decrease.   | the IAS will increase and the margin to low speed buffet will increase.                                 | the IAS will decrease and the margin to low speed buffet will decrease.   | the IAS will decrease and the margin to low speed buffet will increase. |
| 204. | The tyre speed limit is   | V1 in TAS.  | Max VLOF in TAS.  | Max VLOF in ground speed.   | V1 in ground speed  |
| 205. | For take off performance calculations, what is taken into account ?                             | OAT, pressure altitude, wind, weight.   | Standard temperature, altitude, wind, weight.   | Standard altitude, standard temperature, wind, weight.  | Standard temperature, pressure altitude, wind, weight.                  |

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| 206. | Which 3 speeds are effectively the same for a jet aircraft   | ROC, Range, minimum Drag.   | Range, Best angle of climb, minimum Drag.                               | Best angle of climb, minimum Drag, Endurance.                                    | Best angle of climb, Range, Endurance.  |
| 207. | When an aircraft takes-off at the mass it was limited to by the TODA:  | the end of the runway will be cleared by 35ft following an engine failure just before V1. | the actual take-off mass equals the field length limited take-off mass. | the distance from BRP to V1 is equal to the distance from V1 to the 35ft screen. | the balanced take-off distance equals 115% of the all engine take-off distance. |
| 208. | Which of the following speeds give the maximum obstacle clearance in the climb?                                    | VY  | 1.2VSI  | VX   | VFE   |
| 209. | For a jet flying at a constant altitude, at the maximum range speed, what is the effect on IAS and Drag over time? | Increase, Increases.  | Decrease, Constant.   | Constant, Decrease.  | Decrease, Decrease.   |
| 210. | For an aircraft gliding at it's best glide range speed, if AoA is reduced:   | glide distance will increase.   | glide distance will remain unaffected.                                  | glide distance will decrease.  | glide distance will remain constant, if speed is increase                       |
| 211. | What happens to the cost index when flying above the optimum Long Range cruise speed?                              | Cost index is not affected by speed.  | Cost index will increase with increased speed.                          | Cost index will decrease with increased speed.                                   | It all depends on how much the speed is changed by.                             |
| 212. | By what percentage should V2 be greater than VMCA?   | 0.3   | 0.1   | 0.2  | 0.15  |
| 213. | Reduced take off thrust:   | can be used if the headwind component during  | can be used if the take off mass is higher than the performance         | is not recommended at very low temperatures.                                     | has the benefit of improving engine life.                                       |

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|      |  | take off is at least 10 kts.                            | limited take off mass.                                 |  |   |
| 214. | Reduced take off thrust:   | can only be used in daylight.                           | can't be used on a wet runway.                         | is not recommended when wind shear is expected on departure. | is not recommended at sea level.                        |
| 215. | May the anti-skid be considered in determining the take off and landing mass limits?         | Only landing.   | Only take off.   | Yes  | No  |
| 216. | Induced drag?  | Increases with increased airspeed.                      | Decreases with increased airspeed.                     | Independent of airspeed.                                     | Initially increases and the decreases with speed        |
| 217. | A headwind component:  | increases climb angle.                                  | decreases climb angle.                                 | increases best rate of climb.                                | decreases rate of climb.                                |
| 218. | V1 is limited by:  | VMCG and VR.  | VMCA and VR.   | V2 and VR.   | 1.05 VMCA.  |
| 219. | VR is:   | less than V1.   | more than V2.  | less than VMCG.  | equal to or more than V1.                               |
| 220. | What is the effect of an increase in pressure altitude?                                      | increased take-off distance with increased performance. | decreased take-off distance and increased performance. | increased take-off distance and decreased performance.       | decreased take-off distance with decreased performance. |
| 221. | What affects endurance?  | speed and weight.                                       | speed and fuel on board.                               | speed, weight and fuel on board.                             | none of the above.                                      |
| 222. | What degrades aircraft performance?  | low altitude, low temperature, low humidity.            | high altitude, high temperature, high humidity.        | low altitude, high temperature, low humidity.                | high temperature, high altitude, low humidity.          |
| 223. | Losing an engine during the take off above Vmca means the aircraft will be able to maintain: | Altitude.   | Straight and level flight.                             | Heading.   | Bank angle.   |

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| 224. | What happens if V <sub>1</sub> is reduced when takeoff weight is limited by TOD?    | ASD decrease and TOR decrease                                 | ASD decrease   | ASD increase  | TOD decrease and ASD increase   |
| 225. | The cause of restriction on MZFW is due to:   | Avoid undue stress on wing structure                          | Ensure that a fully loaded aircraft will be able to follow a safe flight | Avoid aircraft structural failure                             | both 'b' and 'c'  |
| 226. | What should the pilot do if an engine failure occurs prior to V <sub>2</sub> speed? | Maintain speed of engine failure up to flap retraction height | Maintain V <sub>2</sub> speed upto the height of 1500 feet               | Maintain V <sub>2</sub> speed upto the flap retraction height | Maintain V <sub>2</sub> speed upto the landing gear retraction height |
| 227. | The conditions for flight over water is to:   | Maintain normal operating speed                               | Maintain maximum true airspeed   | Maintain maximum altitude                                     | Maintain maximum ground speed   |
| 228. | The gradient of climb is the ratio of:  | Rate of climb to the horizontal distance traveled             | Change in height to the horizontal distance traveled                     | Rate of climb to the change of height                         | Horizontal distance traveled to the change in height                  |
| 229. | A field is said to be balanced when   | ASD required is less than ASD available                       | TOR required is equal to TOR available                                   | ASD/TOD required is equal to the ASD/TOD available            | TOD required is greater than TOD available                            |
| 230. | For brake release to the point where aircraft attains a height of 35 ft is called:  | TOD   | ASD  | TOR   | Take Off Path   |
| 231. | The conditions in the initial climbout segment are:                                 | Flaps in takeoff position and maximum takeoff power           | Speed equal to flap retraction speed                                     | Landing gear retracting                                       | Gradient of climb is greater than or equal to 1.2%                    |
| 232. | The engine operating limits are:  | Maximum continuous thrust for 5 minutes                       | Maximum takeoff thrust for 5 minutes                                     | Maximum climb thrust for 5 minutes                            | Maximum takeoff thrust for 10 minutes                                 |
| 233. | Balancing of field length is only possible when                                     | V <sub>1</sub> is equal to V <sub>r</sub>                     | V <sub>1</sub> is less than V <sub>r</sub>                               | V <sub>1</sub> is more than V <sub>r</sub>                    | a and c are correct   |

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| 234. | With increase of bank angle, the load factor:   | Decreases  | Increases  | Remains the same  | 'a' and 'c' are correct   |
| 235. | Stopway can be used for additional length for   | TOD & ASD  | TOD & TOR  | ASD only  | TOD only  |
| 236. | Operational items used in aircraft may include  | Crew and galley supplies   | Unusable fluid and galley supplies   | Usable fluids and electronic equipment  | All of the above  |
| 237. | Actual Zero Fuel Weight can be obtained by  | Operational empty weight plus payload  | Taxi weight minus block fuel   | Landing weight minus reserve fuel   | All of the above are correct  |
| 238. | Engine out enroute climb limitation will  | Provide drift down to lower altitude   | Impose a weight penalty at take-off  | Be based on most critical point for single engine failure   | All of the above  |
| 239. | For calculation of centre of gravity, the M.A.C is  | Mean Aerodynamic Chord   | Average chord of the wing  | Average width of the wing   | All of the above  |
| 240. | How does the thrust from a fixed propeller change during the take-off run of an aircraft? | It remains constant.   | It increases slightly as the aircraft speed builds up.                         | It decreases slightly as the aircraft speed builds up.  | It only varies with changes in mass.  |
| 241. | The take-off run is defined as:   | distance to V1 and then to stop, assuming the engine failure is recognised at V1 | distance from brake release to the point where the aircraft reaches V2         | the horizontal distance from the start of the take-off roll to a point equidistant between VLOF and 35 ft | the distance to 35ft with an engine failure at V1 or 1.15 times the all engine distance to 35 ft. |
| 242. | What effect does a downhill slope have on the take-off speeds?                            | It has no effect on V1   | It decreases V1  | It increases V1   | It increases the IAS for take-off   |
| 243. | Density altitude is:  | the true altitude of the aircraft  | the altitude in the standard atmosphere corresponding to the actual conditions | the indicated altitude on the altimeter   | used to calculate en-route safety altitudes   |

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| 244. | The take-off climb gradient:  | increases in a head wind and decreases in a tail wind                                     | decreases in a head wind and increases in a tail wind                 | is independent of the wind component  | is determined with the aircraft in the take-off configuration   |
| 245. | The use of reduced thrust for take-off is permitted:  | if the field length limited take-off mass is greater than the climb limited take-off mass | if the actual take-off mass is less than the structural limiting mass | if the actual take-off mass is less than the field length and climb limited take-off masses         | if the take-off distance required at the actual take-off mass does not exceed the take-off distance available |
| 246. | The maximum and minimum values of V1 are limited by:  | VR and VMCG   | V2 and VMCG   | VR and VMCA   | V2 and VMCA   |
| 247. | A turbo jet is in a climb at a constant IAS what happens to the drag?   | It increases  | It decreases  | it remains constant   | it increases initially then decreases   |
| 248. | Which is the correct sequence of speed?   | Vs, V <sub>Y</sub> , V <sub>X</sub>   | V <sub>X</sub> , V <sub>Y</sub> , V <sub>S</sub>                      | V <sub>S</sub> , V <sub>X</sub> , V <sub>Y</sub>  | V <sub>X</sub> , V <sub>Y</sub> , V <sub>S</sub>  |
| 249. | A turbo jet aircraft is climbing at a constant Mach number in the troposphere Which of the following statements is correct? | TAS and IAS increase  | TAS and IAS decrease  | TAS decreases, IAS increases  | TAS increases, IAS decreases  |
| 250. | The induced drag in an aeroplane:   | increases as speed increases  | Is independent of speed   | decreases as speed increases  | decreases as weight decreases   |
| 251. | Thrust equals drag:   | in unaccelerated level flight   | in an unaccelerated descent   | in an unaccelerated climb   | in a climb, descent or level flight if unaccelerated  |
| 252. | V1 is the speed:  | above which take-off must be rejected if engine failure occurs                            | below which take-off must be continued if engine failure occurs       | engine failure recognized below this speed, take-off must be rejected and above which take-off must | the assumed speed for engine failure  |

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|      |  |   |   | be continued  |   |
| 253. | A constant headwind in the descent:  | Increases the angle of descent                    | Increases the rate of descent   | Increases the angle of the descent flight path                      | Increases the ground distance traveled in the descent   |
| 254. | Why are step climbs used on long range flights in jet transport aircraft?                                      | to comply with ATC flight level constraints       | step climbs have no significance for jet aircraft, they are used by piston aircraft | to fly as close as possible to the optimum altitude as mass reduces | they are only justified if the actual wind conditions differ significantly from the forecast conditions used for planning |
| 255. | The absolute ceiling of an aircraft is:  | where the rate of climb reaches a specified value | always lower than the aerodynamic ceiling   | where the rate of climb is theoretically zero                       | where the gradient of climb is 5%   |
| 256. | A twin engine turbojet aircraft having lost one engine must clear obstacles in the drift down by a minimum of: | 35 ft   | 1000 ft   | 1500 ft   | 2000 ft   |
| 257. | Where would you find information regarding Customs and Health facilities?                                      | ATCC broadcasts                                   | NOTAMs  | NAV/RAD supplements   | AIPs  |
| 258. | Where would you find information regarding Search and Rescue procedures?                                       | ATCC broadcasts                                   | NOTAMs  | SIGMETs   | AIPs  |
| 259. | Where may details of temporary Danger and Restricted Airspace be found?  | SIGMETs   | Aeronautical Information Circulars (AIC)  | NOTAM and Aeronautical Information Publication (AIP)                | ATCC  |
| 260. | Details of temporary danger areas are published:   | in AICs   | on the appropriate chart  | by VOLMET   | in NOTAMs   |

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| 261. | Where would you find information regarding temporary un-serviceability of any facility ?  | AIP  | NOTAM   | AIC  | ATCC   |
| 262. | What is the purpose of Decision Point Procedure?  | Carry minimum fuel to increase Traffic Load.           | Increase safety of the flight.  | Reduce landing mass to avoid stressing the aircraft.                             | Reduce contingency fuel to below that required from Decision Point to destination.   |
| 263. | What is Decision Point Procedure? It is a procedure to reduce the amount of fuel carried on a flight by:  | Reducing contingency fuel from 10% to 5% of trip fuel. | Reducing contingency fuel to only that required from Decision Point to Destination. | Reducing trip fuel to only that required from Decision Aerodrome to Destination. | Reducing contingency fuel to below that required from Decision Point to destination. |
| 264. | Turbo jet ac; taxi fuel 600 kg; fuel flow cruise 10,000 kg/hr; fuel flow hold 8,000 kg/hr; alternate fuel 10,200 kg; flight time 6 hours; visibility at destination 2000 mWhat is the minimum ramp fuel? (Considering contingency 5% of the trip) | 80,500 kg  | 79,200 kg   | 77,800 kg  | 76,100 kg  |
| 265. | For a flight distance to PNR  | Decreases with the increase of headwind component      | Decreases with the increase of tailwind component.                                  | Is not affected by wind component  | Both 'a' and 'b'   |
| 266. | For a flight distance to CP   | Varies with Grand speed home                           | Varies with Grand speed out   | both 'a' and 'b'   | Is not affected with ground speed home or out.                                       |

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| 267. | Distance to PNR is maximum if :   | Tail wind component is maximum.   | Head wind component is maximum   | Head wind or tail component is nil  | None of the above.  |
| 268. | After flying for 16 minutes at 100 kt TAS with a 20 kt tail wind, you have to return to the airfield of departureYou will arrive after:   | 10 min 40 sec   | 20 min   | 24 min  | 16 min  |
| 269. | The fuel burn - off is 200 kg/hr with a relative fuel density of 0.8If the relative fuel density is 0.75, the fuel burn will be:  | 267 kg/hr   | 213 kg/hr  | 200 kg/hr   | 188 kg/hr   |
| 270. | Turbo jet a/c, flying to an isolated airfield, with no destination alternativeOn top of: taxi, trip and contingency fuel, what fuel is required?  | Greater of 45 mins + 15% of trip or 2 hours   | 30 mins holding at 450m AMSL   | 30 mins holding at 450m AAL   | 2 hours at normal cruise consumption  |
| 271. | Minimum planned take-off fuel is 160 kg (30% total reserve is include Assume the ground speed on this trip is constantWhen half the distance has been flow, the remaining fuel is 70 kgs it necessary to divert to a nearby | diversion to a nearby alternate is necessary, because the remaining fuel is not sufficient. | diversion to a nearby alternate is not necessary, because the reserve fuel has not been used completely. | diversion to a nearby alternate is necessary, because it is allowed to calculate the fuel without the reserve | diversion to a nearby alternate is necessary, unless the captain decides to continue on his own responsibility. |

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|      | alternate?   |  |   |   |   |
| 272. | What is Decision Point Procedures? It is a procedure to reduce the amount of fuel carried on a flight by:                        | Reducing contingency fuel from 10% to 5% of trip fuel.   | Reducing contingency fuel to only that required from Decision Point to Destination                          | Reducing trip fuel to only that required from Decision Aerodrome to Destination.                                  | Reducing trip distance  |
| 273. | What is the purpose of Decision Point Procedure?   | Carry minimum fuel to increase Traffic Load.   | Increase safety of the flight.  | Reduce landing mass to avoid stressing the aircraft.  | To assist in decision making at refueling   |
| 274. | An appropriate flight level for IFR flight in accordance with semi-circular height rules on a course of 180 degrees magnetic is: | FL105  | FL90  | FL95  | FL 100  |
| 275. | For an IFR flight using ICAO semi-circular RVSM cruising levels on a magnetic track of 200, which is a suitable level?           | FL290  | FL310   | FL320   | FL330   |
| 276. | A "current flight plan" is:  | flight plan in the course of which radio communication should be practised between aeroplane and ATC | filed flight plan   | flight plan with the correct time of departure  | filed flight plan with amendments and clearances include                          |
| 277. | A repetitive flight plan (RPL) is filed for a scheduled flight: Paris-Orly to Angouleme, Paris-Orly as alternateFollowing        | It is not possible to plan another destination and that flight has to be simply cancelled that day   | The airline's Operations department has to transmit a change to the RPL to the ATC office, at least half an | The pilot-in-command must advise ATC of his intention to divert to Limoges at least 15 minutes before the planned | The RPL must be cancelled for that day and an individual flight plan must be file |

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|      | heavy snow falls, Angouleme airport will be closed at the expected time of arrivalThe airline decides before departure to plan a re-routing of that flight to Limoges | (scheduled flight and not chartere                         | hour before the planned time of departure.  | time of arrival.                        |  |
| 278. | For a flight plan filed before flight, the indicated time of departure is:  | the time overhead the first reporting point after take-off | the time at which the flight plan is filed. | c, The estimated off-block time.        | The time of take-off.                      |
| 279. | For a radio equipped aircraft, the identifier in the ATS flight plan item 7 must always:  | be the RTF call sign to be used                            | include the aircraft registration           | include the operating agency designator | include an indication of the aircraft type |
| 280. | Given: Maximum Certificated take-off mass 137 000 kg Actual take-off mass 135 000 kg For item 9 of the ATS flight plan the wake turbulence category is:               | medium plus "M+"   | heavy/medium "H/M"                          | medium "M"                              | Heavy "H"                                  |
| 281. | How many hours in advance of departure time should a flight plan be filed in the case of flights into areas subject to air traffic flow management (ATFM) ?           | 3.00 hrs   | 0.30 hrs                                    | 1.00 hr                                 | 0.10 hr                                    |
| 282. | If a pilot lands at an aerodrome other than   | 45 mins  | 30 mins                                     | 15 mins                                 | 10 mins                                    |

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|      | the destination aerodrome specified in the ICAO flight plan, he/she must ensure that the ATS unit at the destination is informed within a specified time of her planned ETA at destinationThe time is: |                                       |                                     |   |  |
| 283. | If equipment listed in item 19 is not carried:   | Circle boxes of equipment not carried | Tick the boxes of equipment carried | Cross out the boxes for equipment not carried | List equipment carried in box 18 (other information) |
| 284. | If the destination airport has no ICAO indicator, in box 16 of your ATS flight plan, you write:  | ////                                  | AAAA                                | XXXX  | ZZZZ   |
| 285. | In an ATS flight plan an aircraft will be classified as "L" if its MTOM is ?   | 27 000 kg                             | 10 000 kg                           | 57 000 kg                                     | 7 000 kg   |
| 286. | In an ATS flight plan item 15 where either a route for which standard departure (Sid) and a standard arrival (STAR) are provided   | SID should be entered but not STAR    | Both should be entered              | STAR should be entered but not SID            | SID nor STAR should be entered                       |
| 287. | In order to comply with PANS-RAC, during an IFR flight, deviations from flight plan particulars should be reported to  | TAS 3% and time 3 minutes             | TAS 5% and time 3 minutes           | TAS 5 kt and time 5 minutes                   | TAS 10 kt and time 2 minutes.                        |

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|      | ATC Concerning TAS and time, the minimum deviations which must be reported are:   |  |  |  |   |
| 288. | In the ATS flight plan item 15, for a flight along a designated route, where the departure aerodrome is not on or connected to that route:                              | It is not necessary to indicate the point of joining that route as it will be obvious to the ATS unit. | It is necessary only to give the first reporting point on that route | The letters "DCT" should be entered, followed by the point of joining the ATS route. | The words "as cleared" should be entered  |
| 289. | In the ATS flight plan item 15, it is necessary to enter any point at which a change of cruising speed takes place. For this purpose a "change of speed" is defined as: | 10% TAS or 0.05 Mach or more   | 20 knots or 0.05 Mach or more.                                       | 5% TAS or 0.01 Mach or more  | 20km per hour or 0.1 Mach or more         |
| 290. | In the event that SELCAL is prescribed by an appropriate authority, in which section of the ATS flight plan will the SELCAL code be entered?                            | equipment  | route  | aircraft identification  | other information                         |
| 291. | Reference item 19 of the ICAO flight plan, Endurance is?  | Maximum flight time plus 45 minutes holding fuel   | Maximum flight time plus 30 minutes holding fuel                     | Fuel endurance of the aircraft   | Total usable fuel required for the flight |
| 292. | Standard equipment in item 10a is considered to be:   | VHF, RTF, ADF, VOR, ILS  | HF, RTF, VOR, DME  | VHF, VOR, ADF  | VHF, RTF, ILS, VOR                        |
| 293. | Total Elapsed Time for  | take-off until   | take-off until   | taxi-out prior to take-  | taxiing until the IAF                     |

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|      | an IFR flight, when filling in the ICAO flight plan at box 16, is the time elapsed from   | landing                             | reaching the IAF ( Initial Approach Fix) of the destination aerodrome | off until taxiing after landing              | (Initial Approach Fix) of the destination aerodrome. |
| 294. | When filling in a flight plan, wake turbulence category is a function of ?  | Max certificated landing mass.      | Max certificated take-off mass  | Estimated landing mass                       | Estimated take-off mass                              |
| 295. | When submitting a flight plan before flight, departure time is ?  | Overhead the first reporting point  | At which the aircraft leaves the parking area                         | Take-off d. At which flight plan is filed    | From taxi to arrival on the gate.                    |
| 296. | You have a flight plan, IFR, from Amsterdam to London. In the flight plan it is noted that you will deviate from the ATS route on passing the FIR boundary Amsterdam/London. The airway clearance reads " Cleared to London via flight plan route." Which of these statements is correct? | The filed deviation is not accepted | The route according to the flight plan is accepted                    | It is not allowed to file such a flight plan | You will get a separate clearance for the deviation  |
| 297. | An ATC flight plan should be filed.....before departure of the flight   | 30 mins                             | 45 mins   | 1 hrs  | 2 hrs  |
| 298. | During a flight ETA to next reporting point shall be revised if it differ by :  | 5 minutes or more                   | 4 minutes or more   | 3 minutes or more                            | need not to be revise                                |
| 299. | Information on Search and Rescue (SAR)  | from NOTAMs.                        | from the latest AIC.  | from the Aeronautical Information            | by RT communication with the FIR within              |

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|      | procedures may be obtained:   |                                    |                          | Publication.                | which the aircraft is operating. 1 |
| 300. | Given: Trip time 3hr 06min Block fuel 118kg Taxi fuel 8kg If the aircraft is required at any time during its flight to have a minimum reserve fuel of 30% of trip fuel remaining, the minimum fuel amount after 2hr is: | 39 kg                              | 55 kg                    | 42 kg                       | 45 kg                              |
| 301. | On a Jeppesen chart the figures FL80 2700a are displayed below an airway What does the "FL80" indicate?   | The Route MORA (a Safety Altitude) | Minimum Enroute Altitude | Maximum Authorized Altitude | The base of the airway             |
| 302. | In the Jeppesen SID, STARs & IAP directions are given as  | True Course/Track                  | Magnetic Course/Track    | True Heading                | Magnetic Heading                   |
| 303. | Given: MTOM 62000 kg MLM 54000 kg DOM 35500 kg MZFM 51300 kg Take Off Fuel 14500 kg Landing Fuel 3500 kg The maximum traffic load for this flight is  | 15000 kg                           | 15800 kg                 | 12000 kg                    | 4000 kg                            |
| 304. | Given: GS OUT 178 GS HOME 249 Distance A to B 450 nm Endurance 3 hours What is the distance to the Point of Safe Return from A ?  | 204 nm                             | 311 nm                   | 415 nm                      | 262 nm                             |

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| 305. | You are cruising at FL250 and need to be at FL50 10 nm before a VOR/DME Your rate of descent is 1250 ft/min and your GS in the descent 250 ktHow far before the VOR/DME should you start your descent ? | 66.7 nm                                      | 83.3 nm  | 98.5 nm   | 76.7 nm   |
| 306. | When completing an IFR flight plan the Total Elapsed Time in item 16 is from  | take-off to overhead the destination airport | from first taxiing under own power until the IAF for destination airport | take off to the IAF for the destination airport | take-off until landing at the destination airport |
| 307. | Distance to CP varies with:   | Ground speed home                            | Ground speed out   | None of 'a' and 'b'                             | always of the mid point                           |

**Human performance**

| SL NO | Question  | Option_1  | Option_2  | Option_3  | Option_4   |
|-------|---|---|---|---|--|
| 1.    | How is oxygen transported around the body ?                       | By red blood cells combined with carbon dioxide                         | By red blood cells combined with nitrogen and water vapour                                      | By red blood cells combined with haemoglobin                          | By red blood cells combined with nitrogen, hormones and plasma                 |
| 2.    | List the symptoms of carbon monoxide poisoning                    | Ruddy complexion, headache, stomach cramps, nausea, feeling lethargic.  | Difficulty in breathing, ruddy complexion, headache, stomach cramps, nausea, feeling lethargic. | Ruddy complexion, headache, nausea, giddiness, stomach cramps.        | Ruddy complexion, headache, tightness across the forehead, impaired judgement. |
| 3.    | The effects of smoking, particularly in relation to aviation are: | An early onset of hypoxia due to an apparent increase in altitude and a | An early onset of hypoxia due to an apparent increase in altitude.                              | An early onset of hypoxia to an apparent increase in altitude up to a | An early onset of hypoxia due to an apparent increase in altitude with a       |

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|     |  | reduction in night vision                   |   | maximum of 40,000 ft.   | resulting risk of anaemia  |
| 4.  | Will smokers experience hypoxia lower or higher cabin altitude than non-smokers ?                    | At a higher cabin altitude                  | At a lower cabin altitude   | Both will experience hypoxia at the approximately the same cabin altitude | Smoking, although harmful in other ways, lessens the effects of hypoxia. |
| 5.  | Where does the exchange of oxygen and carbon dioxide + water vapour take place                       | The arteries                                | The veins   | The capillaries   | The pulmonary veins and arteries   |
| 6.  | The normal range of blood pressure for young adults  | Systolic 120 mm Hg and Diastolic 80 mm HG   | Systolic 80 mm Hg and Diastolic 120 mm HG                         | Systolic 120 mm Hg and Diastolic 120 mm HG                                | Systolic 80 mm Hg and Diastolic 80 mm HG                                 |
| 7.  | Hypotension is   | High blood pressure                         | High pulse rate   | Low blood pressure  | Low pulse rate   |
| 8.  | Treatment of carbon monoxide poisoning where smoking is allowed in flights                           | Immediate descent to MSA                    | Turn up cabin heat  | Keep the patient's body temperature as low as possible                    | Stop all smoking   |
| 9.  | Internal Respiration is  | The brain's control of the pulse rate       | The exchange of oxygen with carbon dioxide and water in the cells | Sighing   | The retention of breath  |
| 10. | What are the constituents of the atmosphere ?  | Oxygen 22%<br>Nitrogen 77%<br>Other gases 1 | Oxygen 22% Nitrogen 78% Other gases 2%                            | Oxygen 21 %<br>Nitrogen 78% Other gases 1                                 | Oxygen 22%<br>Nitrogen 77% Other gases 1                                 |
| 11. | At what height is the partial pressure of oxygen in the lungs approximately half that at sea level ? | 10,000 feet                                 | 25,000 feet   | 30,000 feet   | 18,000 feet  |

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| 12. | What is one of the initial indications of Hypoxia ?  | Blue tinge in the lips  | Stomach cramps  | Pain in the joints   | Impaired judgement  |
| 13. | Why does cold make you more susceptible to Hypoxia ?   | Heart beats faster which uses up more oxygen  | More energy is required when shivering therefore more oxygen used                                   | Lowers temperature of the body which makes it less efficient                                       | Lowers temperature of the body and especially the head which has a debilitating effect on the brain |
| 14. | What is the first action that should be taken by the pilot in the event of a cabin decompression above 10,000 feet?                  | Descend as soon as possible   | Don oxygen mask and check oxygen flow   | Warn the passengers  | Descend and check passengers  |
| 15. | What are the times of useful consciousness at 20,000 ft. (moderate activity)   | 5 minutes   | 1 minute  | 10 minutes   | 30 seconds  |
| 16. | If the symptoms of hyperventilation occur at an altitude where hypoxia is not a consideration, what is the correct remedial action ? | Descend to MSL  | Decrease rate and depth of breathing  | Increase rate of breathing   | If possible lay flat and help to calm sufferer  |
| 17. | What increases the risk of DCS occurring in flight ?   | Scuba diving shortly before flight  | Snorkle diving shortly before flight  | Alcohol  | Smoking   |
| 18. | What are the restrictions to flying after scuba diving ?   | No flying within 48 hours if a depth of 40 feet has been exceeded, otherwise the limit is 12 hours. | No flying within 48 hours if a depth of 30 feet has been exceeded, otherwise the limit is 24 hours. | No flying within 12 hours if a depth of 30 feet has been reached, otherwise the limit is 24 hours. | No flying within 24 hours if a depth of 30 feet has been exceeded, otherwise the limit is 12 hours. |

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| 19. | The altitude that pressure will be half that of MSL in the standard atmosphere is | 8,000 ft.   | 18,000 ft.   | 34,000 ft.  | 33,700 ft.   |
| 20. | Anaemic Hypoxia can be  | Brought on by altitude  | Caused by decompression  | Caused by smoking   | Brought on by fatigue  |
| 21. | In commercial aircraft cabin pressure is normally maintained at                   | Sea level   | 6,000 - 8,000 ft.  | 10,000 ft.  | Below 5,000 ft.  |
| 22. | The "chokes" are associated with  | NIHL  | DCS  | Blockage of the alveoli   | Oxygen loss  |
| 23. | The outer, middle and inner ear are filled with                                   | Air Air Liquid  | Air Liquid Liquid  | Liquid Air Air  | Liquid Liquid Air  |
| 24. | What is the purpose of the Eustachian tube ?                                      | To pass sound waves across the middle ear to the Auditory nerve   | To allow ambient pressure to equalise on both sides of the ear drum                                | To allow ambient pressure to equalise on the middle ear side of the ear drum                                    | To allow ambient pressure to equalise on both sides of the Vestibular apparatus                        |
| 25. | What causes conductive deafness ?   | Damage to the outer ear   | Damage to the pinna  | Damage to the ossicles or the eardrum   | Damage to the middle ear   |
| 26. | What is noise induced hearing loss (NIHL) ?                                       | Loss of hearing due to damage to the ossicles   | Loss of hearing due to damage to the Vestibular apparatus  | Loss of hearing due to damage to the middle ear   | Loss of hearing due to damage to the cochlea   |
| 27. | What is the most important sense for spatial orientation ?                        | Hearing and balance   | Sight  | "Seat of the pants"   | All senses play their part in situation awareness  |
| 28. | If an aircraft accelerates, what do the otoliths indicate to the brain ?          | That the aircraft nose is pitching down; this feeling will be re-enforced by an air driven artificial horizon | That the aircraft is turning; this feeling will be re-enforced by an air driven artificial horizon | That the aircraft is climbing and turning; this feeling will be re-enforced by an air driven artificial horizon | That the aircraft is pitching up; this feeling will be re-enforced by an air driven artificial horizon |
| 29. | When can a pilot experience the "leans"   | In all flight conditions  | In the climb   | In the descent  | In the climb or the descent  |

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| 30. | Which part of the ear senses linear accelerations and decelerations ? | The ossicles in the middle ear     | The otoliths in the middle ear                               | The ossicles in the middle ear                   | The otoliths in the semi-circular canals     |
| 31. | What should a pilot rely on if disorientated in IMC?                  | Vision                             | Turning head to recover from disorientation                  | Sense of balance                                 | Instruments                                  |
| 32. | The Conductive System consists of                                     | The ear drum and ossicles          | The semi-circular canals and otoliths                        | The cochlea and Eustachian tube                  | The cochlea and the Mitus                    |
| 33. | Presbycusis is an impairment of hearing due to                        | Damage to the cochlea              | Damage to the semi-circular canals                           | Age  | Smoking                                      |
| 34. | The Vestibular Apparatus detects .....acceleration                    | Linear                             | Angular  | Angular and linear                               | +g   |
| 35. | Messages are sent in the nervous system by the following means        | Electrical                         | Chemical   | Biological                                       | Electrical and chemical                      |
| 36. | What part of the eye bends the most light ?                           | The cornea                         | The lens   | The pupil  | The retina                                   |
| 37. | What causes long or short sightedness?                                | Presbyopia                         | Astigmatism  | Distortion of the eyeball                        | Distortion of the cornea                     |
| 38. | Is a pilot allowed to fly wearing bi-focal contact lenses?            | Yes                                | Yes , if cleared to do so by a qualified Aviation Specialist | Yes, if cleared to do so by the Authority        | No   |
| 39. | What part of the spectrum should sunglasses filter out ?              | The red and UV end of the spectrum | The blue and UV end of the spectrum                          | All high intensity light                         | UV only                                      |
| 40. | What four factors effect night vision ?                               | Age, alcohol, altitude and smoking | Age, altitude, Instrument lights and smoking                 | Instrument lights, alcohol, altitude and smoking | Age, alcohol, altitude and instrument lights |
| 41. | What is the   | Pull the visors                    | Turn the cockpit lights                                      | Turn the cockpit                                 | Put on sunglasses if                         |

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|     | recommended course of action if encountering an electrical storm during flight`?  | down   | down   | lights to full                                       | available  |
| 42. | Where is the "Blind Spot" ?   | On the iris  | On the fovea   | On the edge of the lens                              | At the entrance to the optic nerve                   |
| 43. | Does lack of oxygen affect sight ?  | Yes  | No   | Sometimes  | It depends on the health of the individual           |
| 44. | The amount of light allowed to enter the eye is controlled by the                 | Cornea   | Retina   | Iris   | Fovea  |
| 45. | Stereopsis is associated with   | Night flying   | Depth perception                                     | Acuity   | Colour blindness                                     |
| 46. | Astigmatism is normally associated with the                                       | Retina   | Fovea  | Iris   | Cornea   |
| 47. | Glaucoma is caused by   | An increase in the pressure of the eye               | A decrease in the pressure of the eye                | A defect of the cornea                               | A defect of the retina                               |
| 48. | Cataracts are associated with the   | Retina   | Tear ducts   | Iris   | Lens   |
| 49. | Using the BMI formula, when will pilots be considered overweight ?                | When they score over 30 for males and 29 for females | When they score over 26 for males and 22 for females | When they score 30 for males and 29 for females      | When they score over 25 for males and 24 for females |
| 50. | Using the BMI formula, when will a pilot be obese ?                               | When they score over 30 for males and 28 for females | When they score over 26 for males and 29 for females | When they score over 30 for males and 29 for females | When they score over 32 for males and 26 for females |
| 51. | What is the weekly level of alcohol consumption that will cause physical damage ? | Consuming 22 units for men and 14 units for women    | Consuming 21 units for men and 15 units for women    | Consuming 24 units for men and 14 units for women    | Consuming 21 units for men and 14 units for women    |

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| 52. | At what rate does the body remove alcohol from the system ?  | Approximately 1.5 units an hour  | Approximately 2 units an hour  | Approximately 2.5 units an hour   | Approximately 1 unit an hour  |
| 53. | What is the absolute minimum time a pilot should stop drinking before flying ?                                   | 6 hours but it depends upon the amount of alcohol that has been consumed     | 24 hours but it depends upon the amount of alcohol that has been consumed  | 12 hours but it depends upon the amount of alcohol that has been consumed                           | 8 hours but it depends upon the amount of alcohol that has been consumed                          |
| 54. | What causes otic barotrauma and when is it likely to occur ?   | Blockage in the Eustachian tube which is most likely to occur in the descent | Blockage in the Eustachian tube which is most likely to occur in the climb | Blockage in the Eustachian tube and around the eardrum which is most likely to occur in the descent | Blockage in the Eustachian tube and around the eardrum which is most likely to occur in the climb |
| 55. | The human body can tolerate a maximum of short duration g force .....in the .....axis                            | 25G vertical   | 45G vertical   | 25G fore/aft  | -3G fore/aft  |
| 56. | The most common cause of in-flight incapacitation is   | Heart Attack   | Influenza  | The common cold   | Gastro-enteritis  |
| 57. | The two types of radiation are   | Galactic and Sun Spots   | Galactic and Solar   | High frequency and Low Frequency  | Solar Flares and Galactic   |
| 58. | If, having tried all normal methods, the ears cannot be cleared in flight, the following action should be taken: | Ignore and it will go away   | Descend to 10,000 ft   | Seek medical advice as soon as possible   | Descend as quickly as possible to minimise pain   |
| 59. | The best method for losing weight is   | The use of appetite suppressants   | Plenty of exercise   | Crash diets   | Exercise and diet   |
| 60. | Hypoglycemia can be caused by  | Not eating regularly or fasting  | Too much sugar in the blood  | Excessive g forces  | Stress  |

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| 61. | Food poisoning normally takes effect within .....of eating contaminated food  | 30 minutes   | 60 minutes   | 90 minutes   | 120 minutes                              |
| 62. | Alcohol is removed from the body at the rate of .....milligrams per .....millilitres per hour:  | 10 50  | 10 100   | 10 120   | 15 100                                   |
| 63. | Permanent damage to the body of a man may occur if the consumption of alcohol level is .....units daily and .....units weekly.                | 5 20   | 5 21   | 5 22   | 3 14                                     |
| 64. | Having successfully overcome a stressful situation once, how will the person react if placed in the same or similar situation a second time ? | There will be little difference                              | He/she will know what is ahead and be already in a stressful condition thus stress will increase | He/she will feel more confident and therefore stress will reduce | It will depend on the individual         |
| 65. | How is performance effected by over and under arousal?  | It is improved   | There is little difference   | It is degraded   | It will depend on the individual         |
| 66. | What is the purpose of the "sympathetic" nervous system?  | To control the emotional response under stressful conditions | To control the effects of adrenalin  | To return the body after the "fight or flee" syndrome            | To prepare the body to "fight or flight" |
| 67. | What is the purpose of  | To prolong the   | To prepare the body  | To direct the  | To return the body                       |

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|     | the "parasympathetic" nervous system ?                                 | bodies mobilisation and return the body to normal after the "fight or flight" syndrome. | to "fight or flee"                                       | adrenalin to the correct organs of the body            | to normal after an emotional response under stressful conditions |
| 68. | Which shaped graph shows the relationship between arousal and stress ? | A U shaped graph  | An inverted U shaped graph                               | A straight 45 'line                                    | An M shaped graph  |
| 69. | Which stressor will cause the most stress ?                            | Home/work interface   | Divorce  | Death of a family member                               | Death of a spouse, partner or child                              |
| 70. | Stress factors are   | Non-cumulative  | Cumulative   | Stress reactions                                       | Stress co-actions  |
| 71. | A comfortable temperature for most people in normal clothing is        | 25°C  | 15°C   | 20°C   | 30 °C  |
| 72. | The Autonomic Nervous system comprises of                              | Sympathetic, Neo-sympathetic and Parasympathetic systems                                | Sympathetic and Parasympathetic systems                  | Neo-sympathetic and Parasympathetic systems            | None of the above  |
| 73. | Define three methods of coping with stress                             | Action coping, Forced Coping, Symptom Directed Coping                                   | Action coping, Cognitive Coping, Symptom Directed coping | Slip coping, Cognitive Coping, Symptom Directed coping | Slip Coping, Action Coping, Symptom Directed coping              |
| 74. | Most successful weapons against high stress levels are                 | Planning, experience and self-control (fewer unexpected situation)                      | Learning, experience and Anticipation                    | Learning, experience and CRM                           | Planning, experience and CRM                                     |
| 75. | A comfortable humidity for most people in normal clothing is           | 40%-50%   | 30%-40%  | 20%-50%  | 40%-60%  |

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| 76. | An additional stress factor (stressor) can be                  | A lack of time  | Homeostatis   | Sympathetic system   | Parasympathetic system  |
| 77. | What is the "cocktail party" effect ?                          | The ability to divide attention when surrounded by many different stimuli | The ability to hear, for example, your own name or call sign, whilst concentrating on something else.           | The ability to divide attention when surrounded by a number of stressors | The ability to divide attention when surrounded by noise.       |
| 78. | On what is our mental model of the world based ?               | Our perception of the environment surrounding us                          | Our experiences and our sensitivities   | Our experiences and learning   | Each of us are different and each models the world individually |
| 79. | Having created a mental model, what is the danger ?            | To only seek information which supports it (Confirmation Bias)            | Other clues outside do not tie up (Environmental Bias)  | We need confirmation (Confirmation Bias)                                 | We are easily swayed by outside influences (Environmental Bias) |
| 80. | How many separate items can be held in the short term memory ? | 8±2   | 9±2   | 7±2  | 6±2   |
| 81. | What is the relationship between arousal and performance ?     | Performance is increased at high levels of arousal                        | Performance is increased by both low and high arousal levels  | Performance is degraded by both low and high arousal levels              | Performance is increased at low levels of arousal               |
| 82. | Environmental Capture is associated with                       | Long term memory  | Working memory  | Short term memory  | Motor programmes  |
| 83. | What is qualitative overload ?                                 | When there are too many responses to be made in the time available        | When the amount of information is perceived to be beyond the attentional capacity and the task is too difficult | When too many responses are required                                     | When responses get transposed due to overload of work           |

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| 84. | What are the two types of attention ?                                | Cognitive and Intuitive   | Intuitive and Behavioural   | Divided and Intuitive   | Selective and Divided   |
| 85. | Two of the factors effecting Long Term Memory are                    | Expectation and Suggestion  | Repetition and Echoism  | Amnesia and anxiety   | Anxiety and concentration.  |
| 86. | Generally human error can be split into two categories               | Faults and static errors  | Static errors and faults  | Dynamic and static errors   | Faults and slips  |
| 87. | An experienced pilot reacting to an engine failure is demonstrating? | Imitation learning  | Operant conditioning learning   | Skill learning  | Insight learning  |
| 88. | Skill-based errors only occur  | In those with little or no experience   | In those who are in the learning process  | In those who have only part-learned a procedure/system  | In those with experience  |
| 89. | Rule-based behaviour involves  | Short term and long term memory   | Short term and Iconic memory  | Long term and Episodic memory   | Short term, long term and Episodic memory   |
| 90. | With regards to procedures you are advised to                        | Memorise all procedures as carefully as possible                                      | Memorise immediate actions and subsequent actions   | Memorise immediate actions and refer to check list for subsequent actions                           | Rely on the checklist for all procedures  |
| 91. | Knowledge based behaviour enables people to                          | Deal smoothly and quickly with procedures   | Deal with situations involving other people and especially with the flight and cabin crews          | Deal with known situations  | Deal with unfamiliar and novel situations   |
| 92. | Situation awareness is   | The process that ensures the pilot maintains an accurate model of his/her environment | The process that ensures the pilot maintains an accurate model of the situation within the cockpit. | The process that ensures the pilot maintains an accurate model of the situation outside the cockpit | The process that ensures the pilot maintains an accurate model of the situation on and around the landing point |

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| 93.  | Among the most important factors which might interfere with Situational Awareness are | Weather patterns  | Inter-personal differences   | Hopes, wishes and desires   | Poor instrument layouts  |
| 94.  | A tendency to ask leading questions is a symptom of                                   | Increased awareness   | Decreased awareness  | Increased situational awareness   | Decreased situational awareness  |
| 95.  | What is the likely effect of a runway which is wider than expected ?                  | Flaring too late and damaging the aircraft  | Flaring too soon and causing a heavy landing   | Approach speed much too high  | Approach speed higher than usual   |
| 96.  | What approach conditions cause "black hole effect"                                    | Landing at night in sleet or heavy rain   | Landing at night with a partially lit runway   | Landing at night with the cockpit instruments turned up too high  | Landing at night when there are no lights on the approach  |
| 97.  | How does the "black hole effect" alter the pilots' judgement of the approach ?        | Over-estimation of height   | Under-estimation of height   | Tends to make the approach much too fast  | Tends to make the approach faster than normal  |
| 98.  | What are the main visual cues for rounding-out ?                                      | Round-out height and speed  | Confirmation of Decision Height and closing speed  | Closing speed and height check  | Relative speed and texture   |
| 99.  | How do misty/foggy conditions effect the pilots judgement on the approach ?           | Under-estimating range due to illusionary effect through cockpit glass                                    | Under-estimating range due to the lights appearing dim   | Under-estimating range due to illusionary effect through cockpit glass  | Over-estimating range due to the lights appearing dim  |
| 100. | How will an oncoming aircraft on a line of constant bearing appear visually?          | There will be no relative movement and it will appear to be very small until seconds before the collision | There will be no relative movement and it will appear to be very small until seconds before the aircraft passes close by | There will be no relative movement and it will appear to be very small until seconds before the aircraft passes above | There will be no relative movement and it will appear to be very small until seconds before the aircraft passes well clear |

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| 101. | What visual technique should be used when searching for an aircraft ?   | Sweep from side to side with the eyes covering the whole field of vision | Search the sky portion by portion starting on the left      | Pinpoint 10° segments of the sky and confirm before passing onto another  | Use a succession of small and rapid eye movements                            |
| 102. | Refraction, due to rain on the windscreen, makes the approach   | Steeper  | Flatter   | Faster  | Slower   |
| 103. | If an illusion is known to be possible at a particular aerodrome, as Captain of the aircraft, you should:               | Say nothing as it might frighten the crew                                | Ensure you brief the crew                                   | Report the fact to operations so that other crews are aware of the danger | Report the fact to your Operator so that other crews are aware of the danger |
| 104. | How long is a free running circadian rhythm ?   | 24 hours   | 48 hours  | 25 hours  | 29 hours   |
| 105. | When is the circadian cycle of temperature at its lowest ?  | At about 0500 hrs  | At about 0 100 hrs  | At about 0300 hrs   | Varies from day to day   |
| 106. | What does the duration of sleep depend on ?   | The mental and physical exercise taken prior to sleep                    | The number of hours awake prior to sleep                    | Timing i.e . when the body temperature is falling                         | The quality of the REM sleep   |
| 107. | What is the maximum number of "sleep credits" that can be accumulated and what is the minimum time to accumulate them ? | 24 credits and it will take 12 hours                                     | 8 credits and it will take 16 hours                         | 16 credits and it will take 12 hours                                      | 16 credits and it will take 8 hours  |
| 108. | How many stages are there in a sleep cycle ?  | 3 stages plus REM  | 4 stages plus REM   | 3 stages including REM  | 4 stages including REM   |
| 109. | What is the function of REM sleep ?   | To refresh the body after exercise                                       | To refresh the body and brain following physical and mental | To assist in the organisation of memory and helping                       | To exercise the brain so it is prepared for the next day                     |

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|      |  |   | activity  | to co-ordinate and assimilate new information learned   |   |
| 110. | What effect does drinking alcohol before sleep have to the sleep pattern ?                 | A small amount (one beer or a small whisky) is of help to relax the body prior to sleep and thus enhances the sleep pattern | It lengthens REM sleep and the length of sleep  | It shortens REM sleep and the length of sleep   | It has not significant effect on the sleep pattern itself but does effect other systems of the body adversely |
| 111. | When suffering from sleep deprivation, will performance be further decreased by altitude ? | No  | Yes   | Sometimes   | Under certain circumstances   |
| 112. | The two forms of fatigue are   | Mental and physical   | Short-term and chronic  | Mental and body   | Psychological and physiological   |
| 113. | Insomnia is divided into   | Psychological and physiological   | Mental and physical   | Clinical and situational  | Clinical and physiological  |
| 114. | What is the most effective way of analysing personality ?                                  | Group therapy   | Written questionnaires  | Personal interviews   | Two Dimensional Model analysis  |
| 115. | How would a person who is aggressive and changeable be described ?                         | Aggressive extravert  | Unpredictable extravert   | Unreliable extravert  | Anxious extravert   |
| 116. | What are the personality traits of a good pilot?   | Reliable and stable   | Stable and extraverted  | Reliable and extraverted  | Reliable, calm and extraverted  |
| 117. | What characteristics will authoritarian pilots display ?                                   | Are autocratic on most occasions  | Are autocratic with the crew of the aircraft but submissive when dealing with when an emergency or when | Are autocratic when in command and submissive when confronted by someone of higher perceived status | Tend to be authoritarian when dressed in uniform and when dealing with both air and cabin crew                |

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|      |   |  | under stress                                    |   |   |
| 118. | If a group - with someone who has above average ability - makes a decision, is the decision likely to be better or worse than one made by the above average person on their own ? | Unlikely to be better  | Likely to be better                             | Likely to be worse  | It depends on the number of the member of the group     |
| 119. | Is a group decision likely to be more or less risky than one made by the individual members ?   | Less risky   | Sometimes more risky                            | Sometimes less risky  | More risky  |
| 120. | What should a Captain do before making a non-urgent decision ?  | Put his own view forward and then ask for the opinions of other members of the crew      | Consider all the implications                   | Encourage ideas from the crew before stating his own opinion                    | Monitor his motor programme (flying)                    |
| 121. | Body Language is  | Non-verbal communication   | Sign Language                                   | Aggression  | Verbal communication which is open to cultural problems |
| 122. | What are the three types of Authority Gradients Cockpit   | Autocratic, Subjective, Synergistic  | Autocratic, Submissive, Synergistic             | Laisser-Faire, Subjective, Synergistic  | Autocratic, Laisser-Faire, Synergistic                  |
| 123. | To counter-act an authoritarian cockpit crews should  | Ensure that they ensure that their opinions are heard in spite of possible confrontation | Remain silent and sort it all out on the ground | Co-operate in a conciliatory form but the contents of this co-operation is firm | Obtain support from another crew member                 |

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| 124. | CFIT means  | Controlled Flight in Terminal airspace  | Controlled Flight into Terrain  | Controlled Flying in Training  | Controlled Flying in Taxiways (helicopters)   |
| 125. | Implicit questions are  | Is another name for closed questions  | Require deductions to be made before an answer is possible                                      | Does not Require deductions to be made before an answer is possible                                    | Require a quick answer  |
| 126. | Having interrupted your Captain for a sound reason you must       | Attempt to establish eye contact with him/her   | Remind him/her of his/her last action before the interruption                                   | Make sure there is no ATC traffic on the radio   | You must never interrupt  |
| 127. | A briefing should consist of less than                            | 7 ideas   | 10 ideas  | 7 sentences  | 10 sentences  |
| 128. | Among the rules to improve crew co-operation are                  | Good briefings and awareness of cultural differences  | Good briefings and a harmonious cockpit atmosphere  | Use professional language  | Resist putting your opinion forward first   |
| 129. | Communication in the cockpit is primarily used for what purpose ? | It is the main tool to ensure coordination  | It is the main tool to ensure comprehension   | It is the main tool to ensure harmony  | It is the main tool to ensure understanding   |
| 130. | What is meant by the term "Synergy" ?                             | Synergy is the state where the individual performances exceeds the sum of the group performance | Synergy is the state where the group performance exceeds the sum of the individual performances | Synergy is the state where the group performance exceeds the sum of the individual performances by 50% | Synergy is the state where the individual performances exceeds the sum of the group performance by 5 0% |
| 131. | What is a dialogue ?  | A conversation between two people   | A series of communications on different subjects between a transmitter and receiver             | A series of communications on the same subject between a transmitter and receiver                      | A communication between two or more people or machines  |

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| 132. | What are the key points of a good briefing ?   | Individual, understood and simple  | Individual, clear and simple  | Individual, understood and short  | Simple, clear, understood and individual  |
| 133. | What is the purpose of the lumbar support ?  | To allow the most comfortable position for the spine and higher neck bones | To allow the most comfortable position for the spine and shoulder bones | To allow the most comfortable position for the spine  | To produce an even pressure of the discs by allowing the lower spine to curve naturally |
| 134. | What are the essential characteristics of a cockpit warning ?                            | It should have the best attention-getting qualities as possible            | It should be attention-getting but not alarming                         | It should have attention-getting qualities which do not compromise a clear indication to the pilot of the faulty component/system | Must not dazzle or possibly compromise the crew's night vision                          |
| 135. | What is the most important feature of flight deck design ?                               | Escape and emergency exits should be clear of obstructions                 | The Design Eye Point must be clearly marked                             | Important controls must be located in easily reached and unobstructed positions   | Control and indicators should be standardised   |
| 136. | What will the pilot lose sight of on the approach if seated below the Design Eye Point ? | Some of the undershoot   | Some of the overshoot   | Peripheral objects especially at night  | The Sight View  |
| 137. | What instrument is best for showing small change ?                                       | A digital display  | An analogue display   | A mixed digital/analogue display  | Ultra/high-precision gyro instrument  |
| 138. | What colour should the 'Alert' warning be on a CRT ?                                     | Bright red and flashing  | Steady Red  | Flashing yellow/amber   | Steady yellow   |
| 139. | In the Shell Model L stands for  | Latent errors  | Long-termed errors  | Lengthy errors  | Liveware  |

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| 140. | A flashing red warning light on a CRT normally indicates                                  | There is a fault in a critical system                       | Emergency   | Alert  | Danger  |
| 141. | Automation Complacency is   | Overconfidence in the handling capability of the pilot      | Overconfidence in the handling capability of the pilot of computers | Over-reliance on automation  | The blind belief in automation                                  |
| 142. | Mode error is associated with   | Automation  | Hardware  | INS  | Software  |
| 143. | Automation can result in  | Lack of information being passed between crew members       | Too much information being passed between crew members              | Confused information being passed between crew members                     | Too much detailed information being passed between crew members |
| 144. | What are the categories of risk ?   | Objective/Sudden and Subjective/Gradual                     | Sudden/Impromptu and Gradual/Planned                                | External/Objective and Internal/Subjective                                 | Impromptu/Objective and Planned/Subjective                      |
| 145. | Evaluation of options in the decision-making process involve                              | Positive and negative considerations                        | Values and costs  | Planned and impromptu considerations                                       | Assigning tasks   |
| 146. | Press-on-tis is a   | Common dilemma faced by all pilots                          | Is only experienced by skilled pilots                               | Only happens to inexperienced pilots                                       | Is rarely faced by good pilots                                  |
| 147. | The composition of the atmosphere from sea level to about 70,000ft retains proportions of | 50%Nitrogen, 40%Oxygen, 10%other gases.                     | 78%Oxygen, 21 %Nitrogen, 1 %other gases.                            | 78%Nitrogen, 21 %Oxygen, 1 %other gases.                                   | 76%Nitrogen, 14%Oxygen, 10%other gases.                         |
| 148. | Oxygen is transported in the blood:   | dissolved in the blood plasma.                              | in chemical combination with haemoglobin in the white blood cells.  | as microscopic bubbles linked to blood platelets.                          | in combination with haemoglobin in the red blood cells.         |
| 149. | Safety in commercial air transport:   | is better than road safety, but not as good as rail safety. | though effective, lagging behind road and rail safety.              | increasing each year, due to the increasing automation of modern aircraft. | better than road safety and rail safety.                        |

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| 150. | The time of useful consciousness for a pilot, undertaking moderate activity, when exposed to progressive decompression at 30,000 ft is: | 30 minutes.   | 45 seconds.   | 12 seconds.   | 2 to 3 minutes.   |
| 151. | With a large aircraft maintaining a standard 3° approach to a runway, the touchdown point will be:                                      | at the visual aiming point.   | further into the runway than the visual aiming point.   | short or long from the visual aiming point depending on the runway slope.                               | short of the visual aiming point.   |
| 152. | 'Risky shift' is:   | a flight or task undertaken at a time when the body's circadian rhythms are at their lowest point of efficiency.                                    | the process by which the central decision-maker will ignore any information which does not fit the mental model created by the situation. | the tendency of a group of individuals to accept a higher risk than any individual member of the group. | the natural tendency of the human mind to blame outside agencies for any errors made in an emergency situation.   |
| 153. | The eye datum or design eye position in the cockpit is established:   | so that the pilot can maintain an adequate view of all the important displays inside, and of the world outside with minimum head or body movements. | to enable the pilot to see all his flight instruments within minimum scan movements of the head.  | at the centre of the artificial horizon or flight director indicator.                                   | to determine the eventual size of the flight deck and where the window frames will be positioned so as to give minimum interference to the pilot's field of view. |
| 154. | Which of the following is NOT one of the 5 hazardous attitudes?   | Macho.  | Anti-authority.   | Impulsivity.  | Domination.   |
| 155. | The area on the retina  | the blind spot.   | The fovea.  | The Rod/Cone  | The most sensitive  |

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|      | where the optic nerve receives all the information from the light sensitive cells of the retina is:                   |  |   | intersection point.                           | part of the retina with the highest visual acuity.                          |
| 156. | A man is considered to be obese if his Body Mass Inde(BMI) is over:   | 18   | 25  | 22  | 30  |
| 157. | Motor programmes:   | are stored as working rules in long term memory. | require conscious thought to engage.        | an be retained for only a few minutes.        | the behavioural sub routines.   |
| 158. | During visual scanning the eye movements should be:   | large and frequent.                              | Small and infrequent.                       | Small and frequent.                           | Large and infrequent.   |
| 159. | The `time of useful consciousness' for an individual experiencing rapid decompression at an altitude of 25,000 ft is: | 45 - 75 seconds.                                 | 30 minutes.                                 | 2 minutes.                                    | 12 seconds.   |
| 160. | Rule based behaviours are stored in the brain:  | as sets of rules in long term memory.            | as `bits' in the working memory.            | as conditioned responses in motor programmes. | as rule giving automatic linkage between the semantic and working memories. |
| 161. | The cabin pressure in commercial pressurized aircraft is normally maintained at an equivalent atmospheric pressure:   | always equivalent to sea level.                  | normally not exceeding 2,000 to 3,000 feet. | normally not exceeding 6,000 to 8,000 feet.   | normally not exceeding 10,000 to 12,000 feet.                               |
| 162. | `Environment capture' is the process whereby:   | the pilot becomes fixated on the                 | the pilot keeps `head in cockpit' to an     | the pilot is unable to allocate priorities    | the fact of being at a particular stage of                                  |

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|      |  | outside environment and neglects to monitor the instruments in the cockpit.                    | extreme degree and may therefore miss vital cues from the external environment.              | between the exterior and interior environments causing confusion and the possibility of mistakes.                  | flight may cause an automatic response to checks when the actions have not actually been completed.   |
| 163. | Any individual who has been SCUBA diving should avoid flying:                    | within 36 hours of the last dive.  | within 24 hours or 48 hours if a depth of 30 ft has been exceeded.                           | only after consultation with a doctor if a depth of 30 ft has been exceeded.                                       | within 12 hours, or 24 hours if a depth of 30 ft has been exceeded.   |
| 164. | Loss of hearing due to damage or defects in the eardrum or auditory ossicles is; | presbycusis.   | noise induced hearing loss (NIHL)  | conductive deafness.   | middle ear disconnection.   |
| 165. | A system can be said to be tolerant of error when:                               | its safety system is too subject to error.   | its safety system has taken into account all statistically probable errors.                  | the consequence of error will not seriously jeopardize safety.   | latent errors do not entail serious consequences for safety.  |
| 166. | The physiological responses to high levels of stress are:                        | fear, anxiety, depression.   | sweating, dryness of the mouth, breathing difficulties.                                      | indecision, inattention, withdrawal.   | temporary mental confusion, restlessness.   |
| 167. | The term 'atmospheric perspective' in aviation means:                            | a change in the attitude of the aircraft could lead to misinterpretation of the runway length. | the tendency for objects to become indistinct with distance.                                 | the tendency of objects of certain colours to remain in view for longer periods during differing light conditions. | the presence of a sloping cloud bank may be mistaken for a horizon, causing a pilot who is flying VMC to bank the aircraft to align it with the cloud bank. |
| 168. | The 'fight or flight' response occurs when:                                      | a normal non-aggressive person suffers stress as result of shock, turns pale,                  | in anger a person becomes red in the face, aggressive and chooses to fight rather than flee. | the sympathetic nervous system provides an individual with the resources to cope with a new and                    | the parasympathetic nervous system provides extra resources for an individual to cope   |

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|      |  | trembles and chooses to flee rather than fight.                         |  | sudden source of stress.   | with a new and sudden source of stress.   |
| 169. | The generally accepted model for the acquisition of expertise or skill comprises three stages:                       | cognitive, associative and automatic.                                   | cognitive, associative and expert.                                   | associative, automatic and expert.   | automatic, cognitive and expert.  |
| 170. | Stress may be defined as:  | a poorly controlled emotion which leads to a reduction in capabilities. | A psychological phenomenon which affects only fragile personalities. | A normal phenomenon that enables an individual to adapt to situations encountered. | A human reaction which individuals must manage to eliminate.  |
| 171. | The speed of any learning process can be increased by:   | gradually increasing the psychological pressure on the students.        | punishing the learner for unsuccessful trials                        | reinforcing successful trials.   | reinforcing errors made during the learning process.  |
| 172. | Decision making in emergency situations requires primarily:  | speed of reaction.  | the distribution of tasks and crew coordination.                     | strong situational awareness.  | the whole crew to focus on the immediate problem.   |
| 173. | On the retina of the eye, the rod cells are:   | used primarily during daylight.   | highly sensitive to colour changes.                                  | sensitive to much lower light levels than the cone cells.                          | concentrated in the area of the fovea.  |
| 174. | The part of the retina with the highest visual acuity is:  | the optic nerve entry point.  | the fovea.   | the retinal optical focus point.   | the rod/cone balance point.   |
| 175. | The composition of the atmosphere at sea level is 78% nitrogen, 21% oxygen, 1 % other gases. These proportions will: | remain constant up to the tropopause.                                   | remain constant up to about 70,000 feet.                             | vary as the aircraft climbs.   | remain constant to about 20,000 feet when the proportion of oxygen will reduce considerably as more of the oxygen will be converted to ozone. |

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| 176. | Discussing private matters in the cockpit:                          | decreases the captains role in leadership  | should be avoided in flight.  | Can improve team spirit   | Is appropriate at any stage of the flight.  |
| 177. | Co-action is a mode of coordination that involves:                  | working in parallel to achieve individual objectives with independent and unrelated aims.                    | sustained cooperation on actions and the formulation of commitments concerning flight situations.   | working in parallel to achieve one common objective, with independent but specified aims.             | the application of procedural knowledge in the conduct of specific actions.   |
| 178. | A pilot suffering from decompression sickness should:               | descend to a lower level where the symptoms will disappear and continue the flight at this or a lower level. | decrease the cabin pressure to relieve the symptoms.  | continue the flight at a lower altitude and carry out exercises to relieve pain in the affected site. | land as soon as possible and seek medical assistance.   |
| 179. | A pilot can improve the probability of detecting other aircraft by: | minimising the duration of eye rests and making as many eye movements as possible:                           | moving the head frequently to alter the apparent motion of any distant object.                      | maximising the time spent looking in each sector to allow the maximum chance of detecting movement.   | maintaining as far as possible a lookout ahead of the aircraft a relying on peripheral vision to detect any movement from the side. |
| 180. | The temperature range of a flight deck to be comfortable should be: | 15°C to 30°C with a relative humidity of 40 - 60%  | 10°C to 25°C with a relative humidity of 20 - 30%   | 15°C to 30°C with a relative humidity of 70 - 80%   | 30°C to 40°C with a relative humidity of 30 - 40%   |
| 181. | Confirmation bias:  | tends to make the pilot accept information that confirms his diagnosis of a situation and reject information | Makes the pilot look for the most probable solution to a problem to avoid using the full checklist. | Will cause the pilot to believe in a particular solution if the other crew members agree with him.    | Is the reinforcement of any idea by any past experience of a similar problem.   |

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|      |  | that does not fit into his theory.  |   |  |  |
| 182. | The greatest source of incapacitation in flight is:                                      | motion sickness.  | heart attack or circulatory problems.   | acute gastro-enteritis.  | spatial disorientation.  |
| 183. | The heart muscle requires its own blood supply. This is provided by:                     | the pulmonary artery.   | direct diffusion from the interior of the heart.  | the aortic arch.   | the coronary arteries.   |
| 184. | Raised blood pressure (hypertension) is the main risk factor in the development of:      | strokes.  | angina.   | coronary infarcts.   | ferric haemoglobin poisoning.  |
| 185. | A man is considered to be overweight if his Body Mass Inde(BMI) is over:                 | 20  | 25  | 30   | 35   |
| 186. | Thinking on human reliability is changing. Which of the following statements is correct? | human errors are now considered as being inherent to the cognitive functions of humans and are generally inescapable. | human errors can be avoided. It will however extending one's knowledge and extreme vigilance. | the individual view of safety has gradually replaced the systemic view.              | it is believed that it will be possible to eliminate all errors in the future. |
| 187. | How would one interpret the following statement; 'one cannot avoid communication'?       | every situation requires communication.   | One can not influence one's own communications.   | Being silent or inactive are also non-verbal behaviour patterns that are meaningful. | Differences in language or culture may prevent any meaningful communication.   |
| 188. | Information in the short term memory:  | is not affected by the arrival of new information.  | is only retained for 2 to 3 minutes.  | can be retained for long periods.  | must be actively rehearsed to ensure long term retention.                      |

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| 189. | The permanent denial of a flying licence will be the result of the pilot suffering from: | depression.  | anxiety and phobic states.                             | obsessional disorders.  | schizophrenia or manic depression.  |
| 190. | A function of the vestibular apparatus is to:  | assist in maintaining spatial orientation.                                 | control motion sickness.                               | maintain visual orientation.  | enhance hearing ability, especially at high frequencies.  |
| 191. | In the late stages of an approach, ground proximity is judged by:                        | colour and contrast of ground features.                                    | position of the aircraft nose relative to the horizon. | texture and relative speed of ground features.  | position of the aircraft nose relative to the visual aiming point.                                  |
| 192. | An individual's performance is adversely affected by:                                    | high arousal state.  | low arousal state                                      | neither high nor low arousal state.   | both high and low arousal states.   |
| 193. | A motor programme is:  | one that is based on knowledge and experience.                             | the way that a checklist is actioned.                  | one that requires conscious thought throughout its action.  | one that is learned by practice and repetition and which may be executed without conscious thought. |
| 194. | The main factor in the focussing of the human eye is:                                    | the cornea.  | the lens.  | the iris.   | the internal fluid in the eyeball.  |
| 195. | Which of the following statements is correct?  | Poor communications are of little significance in incidents and accidents. | Coding communication behaviour improves flight safety. | Interpersonal communications have little significance in the modern cockpit as all situations are covered by manuals. | Problems in the personal relations between crew members hamper their communication process.         |
| 196. | Referring to the Body Mass Index, a man weighing 81 kg. Who is 175 cm tall would be:     | considered to be within the normal weight range.                           | considered to be overweight.                           | considered to be obese.   | considered to be underweight.   |

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| 197. | An individual's body temperature will be at its lowest at:   | 0900 body time.                                       | 2300 body time.   | 0500 body time.                                  | 1100 body time.   |
| 198. | A pilot suffering disorientation should:   | rely on the vestibular apparatus.                     | Rely on his somatosensory system ('seat of the pants'). | Line up with a visual reference (e.g. horizon).  | Re-erect the flight instruments.  |
| 199. | Mental training is helpful in improving flying skills:   | mainly for student pilots.                            | mainly for pilots undertaking instructional duties.     | at all levels of flying experience.              | only when the student has reached a certain level of flying experience. |
| 200. | Gastro-enteritis would prevent an individual from flying as a crew member:   | always.   | possibly, if severe.                                    | if not treated by an aviation specialist doctor. | never.  |
| 201. | An ideal leader would be:  | goal directed and person directed.                    | goal directed only.                                     | person directed only.                            | neither goal nor person directed, but moderate and accommodating.       |
| 202. | Which of the following diseases causes the greatest number of deaths each year?  | Bubonic plague.                                       | Malaria.  | AIDS.  | Smallpox.   |
| 203. | The time elapsed before flying as crew or passenger after diving using compressed air if a depth of over 30 ft has been exceeded is: | 48 hours.   | 12 hours.   | 24 hours.  | No limitation.  |
| 204. | An authoritarian individual tends to be:   | a weak leader and bad underling.                      | a forceful leader and a good underling.                 | a forceful leader and a submissive underling.    | a weak leader but a good underling.                                     |
| 205. | The term 'attitudes' is used to describe:  | the predisposition for acting in a particular manner. | a synonym for ability.                                  | a synonym for behaviour.                         | the conditions necessary for carrying out an                            |

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|      |   |   |   |   | activity.  |
| 206. | Stress management is:   | the effect on an individual in a managerial, or other responsible, position of the pressures of that job. | the stress upon an employee caused by the pressures imposed by the management or his superiors at work. | the process by which individuals adopt systems to assist in coping with stress.                     | the use of a process, such as relaxation techniques, to remove the stress source.                        |
| 207. | Individuals are more likely to comply with a decision made a person who they perceive as: | larger than they are.   | of a higher status.   | having a better education than themselves.  | being of a greater age.  |
| 208. | A pilot who is diagnosed as having an alcohol problem can:                                | continue to fly as an operating pilot whilst he receives treatment.                                       | never fly again as an operating pilot.  | fly as a pilot only if he is supervised by another pilot.   | return to flying duties after a suitable course of treatment is complete.                                |
| 209. | Risky shift is:   | the tendency for extroverts to take more risks than introverts.   | the tendency for military pilots to take more risks than civilian pilots.                               | the tendency of a group to make a more risky decision than the average individual within the group. | the tendency for individuals to take more risky decisions when transferred to a different aircraft type. |
| 210. | Very high ambition and a need for achievement:  | meets the requirement for stress resistance.  | disturbs the climate of cooperation.  | always promotes effective teamwork.   | makes it easier for an individual to cope with personal failures.  |
| 211. | Long or short sightedness is normally caused by:  | distortion of the cornea.   | the shape of the whole eyeball.   | distortion of the lens.   | a malfunction of the iris.   |
| 212. | 'Environment capture' may lead to:  | errors of rule based behaviour.   | errors of knowledge based behaviour.  | errors of semantic memory.  | errors of skill based behaviour.   |
| 213. | When a pilot has no external visual   | the nose of the aircraft pitching   | the nose of the aircraft pitching down.   | a sudden height loss.   | a banking of the aircraft.   |

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|      | references, a deceleration in straight and level flight can give the impression of:     | up.  |   |  |  |
| 214. | Episodic memory is:   | a memory of events, held in short term memory.             | a memory of information, held in short term memory.       | a memory of information, held in long term memory.           | a memory of events, held in long term memory.  |
| 215. | The use of alcohol, drugs or tobacco to counter the effects of stress is an example of: | action coping  | cognitive coping.   | symptom directed coping.                                     | bio-feedback technique.  |
| 216. | A cockpit warning of an emergency should:   | startle to gain attention.                                 | illuminate a flashing red light.                          | make a noise symptomatic of the problem                      | be attention getting without being startling.  |
| 217. | In processing information an attentional mechanism is required because:                 | working memory has a limited capacity.                     | processing capacity is limited.                           | echoic and iconic memories have a very short retention time. | it will activate a selection from episodic or semantic memory.   |
| 218. | The function of slow wave sleep is believed to be:                                      | a period of rest to allow restoration of the body tissues. | a period to rest and refresh the mind.                    | a period when vivid dreams can take place.                   | help in the learning process especially if a new or difficult procedures have been learned during the day. |
| 219. | Oxygen is carried in the blood:   | in combination with haemoglobin in the white blood cells.  | dissolved in the plasma.                                  | as microscopic bubbles attached to blood platelets.          | within the red blood cells.  |
| 220. | Situational insomnia is:  | an inability to sleep in normal favourable conditions.     | a condition which may be eased by taking many short naps. | an inability to sleep due to circadian dysrhythmia.          | an inability to sleep due to environmental noise.  |

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| 221. | Sleep apnoea:   | occurs more often in older individuals.                                    | occurs when an individual cannot prevent falling asleep even when in sleep credit. | most often occur during REM sleep.   | is a cessation of breathing whilst asleep.             |
| 222. | If colours are used in a cockpit display, yellow should signify:                    | it is acceptable to proceed to the next stage of a process.                | advisory information.  | non-critical functions.  | an alert.  |
| 223. | 'Body language' on the flight deck should:  | not be used.   | be restricted to non-aggressive facial expressions.                                | used to supplement oral communication.   | never used to touch an individual.                     |
| 224. | A circular instrument with a fixed pointer and a moving scale is:                   | an analogue display.   | Ideal for displaying range information.  | Ideal for displaying bearing information.  | A digital display instrument.                          |
| 225. | A pilot is permitted to use bi-focal contact lenses:                                | only during the cruise stage of the flight.                                | never when flying.   | only when a pair of bi-focal spectacles are carried for emergency use.                           | only when flying in daylight hours in VNIC conditions. |
| 226. | Donating blood by an operating flight deck crew member is:                          | permitted, subject to at least 24 hours elapsing before one's next flight. | not permitted for aircrew who are actively flying.                                 | only permitted within 12 hours of one's next flight when cleared by a qualified aviation doctor. | allowable with no restrictions on subsequent flying.   |
| 227. | Long sightedness is normally caused by:   | the eyeball being shorter than normal.                                     | the retina being too concave.  | the eyeball being longer than normal.  | the retina being too convex.                           |
| 228. | The most obvious sign of an individual suffering from carbon monoxide poisoning is: | muscular impairment.   | cyanosis of the lips and fingernails.  | sensory loss, particularly tunneling of vision.  | cherry red lips and flushed cheeks.                    |
| 229. | When on a collision course with an aircraft on a reciprocal track,                  | does not change.   | increases only slowly and moves only slowly across the                             | is easier to detect if the pilot continually moves his/her head.                                 | increases very rapidly just prior to impact.           |

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|      | the apparent size of the approaching aircraft:  |  | windscreen.  |  |  |
| 230. | The body's internal biological clocks take longer to adjust to local time when flying:  | East.  | West.  | North.   | South.   |
| 231. | A blocked Eustachian tube:  | can cause severe pain in the descent.                          | is not a problem when flying in a modern pressurized aircraft. | normally only causes severe pain during the climb.       | can cause problems with balancing the pressures the inner ear and the outside air. |
| 232. | The permanent denial of a flying licence will be the result of a pilot suffering from:  | anxiety and phobic states.                                     | schizophrenia and manic depression.                            | obsessional disorders.                                   | depression.  |
| 233. | A trained pilot, observing an aircraft accident, will, in comparison to a lay observer: | have a much better recollection of the events.                 | be a reliable expert witness at any accident inquiry.          | have stronger expectations about likely set of events.   | automatically discount any any previous accident experience.                       |
| 234. | The alerting system for an important system failure should be fulfilled by:             | an audio warning.  | a flashing red light.  | a large dolls-eye indicator.                             | a steady bright red light.   |
| 235. | Situational awareness may well be inhibited by the introduction of:                     | computer generated checklists.                                 | 'intelligent' flight decks.                                    | pre-recorded voice warnings.                             | moving tape displays.  |
| 236. | The greatest source of incapacitation in flight is:                                     | acute gastro-enteritis.  | angina.  | malaria.   | heart attack.  |
| 237. | Presbycusis is:   | the deterioration of hearing as the result of the normal aging | loss of hearing due to excessive noise levels.                 | deterioration of vision due to the normal aging process. | deterioration in vision due to the formation of cataracts in the                   |

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|      |  | process.   |   |   | cornea.  |
| 238. | The term 'Synergy' is the state:   | where the individual performance exceeds the performance of the group. | where the group performance exceeds the sum of the individual performances. | where the group performance is dependent on the leadership style of individuals within the group. | of increase in reasoning power when extra oxygen is supplied at a time of emergency.     |
| 239. | Which instrument, which was introduced in the 1980's, led to the greatest reduction of accidents ? | SSR  | DME   | GPWS  | TCAS   |
| 240. | Accidents are caused by lack of  | good judgment  | safe maintenance of aircraft  | interpersonal relations   | physical and mental skills   |
| 241. | Who is responsible for Air Safety  | Aircrew and Ground Crew  | Aircrew, Groundcrew and Management  | Everyone involved   | Aircrew only   |
| 242. | Human factors have been statistically proved to contribute approximately                           | 50% of aircraft accidents  | 70% of aircraft accidents   | 90% of aircraft accidents   | Have not played a significant role in aircraft accidents                                 |
| 243. | Having given blood a pilot should see a doctor because of the increased susceptibility to          | Hypoxia  | Low blood pressure  | Hyperventilation  | DCS  |
| 244. | Haemoglobin is   | Dissolved in the blood   | In red blood cells  | In white cells of the blood   | In the platelets   |
| 245. | A pilot should consult an Aviation Medicine specialist before donating blood because:              | Donation may lead to a rise in blood pressure (Hypertension)           | Donation may lead to a lowering of blood pressure (Hypotension)             | Donation may lead to a reduced tolerance of altitude  | Donation may lead to a lowering of the body temperature causing unpredictable sleepiness |

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| 246. | Having donated blood aircrew should  | rest supine for at least 1 hour, drink plenty of fluids and not fly for 48 hours | rest supine for about 15 - 20 minutes, drink plenty of fluids and not fly for 24 hours | Aircrew are prohibited from donating blood | Aircrew are not encouraged to give blood                       |
| 247. | Blood from the pulmonary artery is ?   | Rich in Oxygen and low in carbon dioxide   | Rich in Oxygen and rich in carbon dioxide  | Low in Oxygen and low in carbon dioxide    | Low in Oxygen and rich in carbon dioxide                       |
| 248. | A person is suffering from anaemia when  | Lacking haemoglobin  | b Lacking platelets  | Lacking blood plasma                       | Lacking white blood cells                                      |
| 249. | As a result of hyperventilation the blood becomes  | More acid  | More alkaline  | More saturated with CO2                    | Less saturated with oxygen                                     |
| 250. | The effects of carbon monoxide   | increases with altitude  | decreases with altitude  | increases with increase of density         | decreases with pressure loss                                   |
| 251. | What happens to the Systolic blood pressure if peripheral resistance is increased ?  | Systolic blood pressure rises  | Systolic blood pressure decreases  | Systolic blood pressure is unaffected      | Systolic blood pressure initially decreases and then increases |
| 252. | The walls of the capillaries of the lungs are permeable to   | vitamins   | proteins   | gases                                      | red blood cells  |
| 253. | An increase in the pulse rate can be caused by 1) stress and fear 2) vitamin D 3) physical exercise 4) shortage of oxygen in the early stages of hypoxia | 1, 2, 3 and 4  | 1, 3 and 4   | 2, 3 and 4                                 | 1, 2 and 4   |
| 254. | What is the main factor concerning smoking that reduces the red blood cells' capability to carry oxygen ?  | nicotine   | tar  | carbon Monoxide                            | carbon Dioxide   |

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| 255. | The rate of breathing is controlled by   | the amount of CO <sub>2</sub> in the blood  | partial pressure   | differential of concentration levels     | the heart rate  |
| 256. | Which is the following actions is the most efficient to accelerate the release of Carbon Monoxide from the blood ? | Inhalation of pressurized oxygen  | Inhalation of a mixture of unpressurized oxygen and air                                  | Inhalation of pressurized carbon dioxide | Inhalation of a mixture of unpressurised carbon dioxide and air |
| 257. | DCS is caused by   | Oxygen coming out of solution   | Carbon dioxide coming out of solution  | Nitrogen coming out of solution          | Carbon Monoxide coming out of solution                          |
| 258. | Which of the following symptoms marks the beginning of hyperventilation ?  | Slow heart beat   | Cyanosis   | Dizzy feeling                            | Slow rate of breath   |
| 259. | Carbon Monoxide  | Can have a severe affect on a pilot's abilities when receiving exposure for a relatively short period of time | Does not have an effect when the body becomes used to the gas over a long period of time | Has no affect on the human body          | Is not toxic  |
| 260. | The contents of exhaled air contains   | less water vapour than the inhaled air  | more nitrogen than the inhaled air   | more oxygen than the inhaled air         | more CO <sub>2</sub> than the inhaled air                       |
| 261. | A pilot suffering from hyperventilation during final approach in poor weather can combat the effects by            | Go on 100% oxygen and go around   | Land regardless of the weather   | Regulate depth and rate of breathing     | Declare a Mayday  |
| 262. | What chemical substance in tobacco causes addiction ?  | Tar and nicotine  | Tar and carbon monoxide  | Nicotine and carbon monoxide             | Nicotine  |

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| 263. | A few hours after landing a pilot feels pain in his/her joints. The correct action is   | Take exercise which will cause the pain to disappear | Take physiotherapy   | See an Aviation Medical Specialist as soon as possible        | Ignore it since is probably due to common after-effect of height    |
| 264. | Which of the following statements, if any, are correct 1) Euphoria is a possible result of hypoxia 2) Euphoria can lead to degraded decisions in flight | 1 & 2  | 1 only   | 2 only  | Neither   |
| 265. | 100% oxygen without pressure can be used up to:   | 50,000 ft  | 40,000 ft  | 60,000 ft   | 70,000 ft   |
| 266. | At what altitude is pressure half that at MSL   | 8000 ft  | 10000 ft   | 18000 ft  | 36000 ft  |
| 267. | The Critical Zone of hypoxia begins at  | 18,000 ft  | 20,000 ft  | 23,000 ft   | 3,600 ft  |
| 268. | Short-term memory impairment occurs at what height ?  | 8,000 ft   | 12,000 ft  | 15,000 ft   | 18,000 ft   |
| 269. | Concerning hypoxia, why is it more hazardous if flying solo ?   | The effects are increased                            | It is difficult to recognize the first symptoms of hypoxia for a pilot in initial training | It is more difficult to manage the oxygen systems on your own | There is no one to take control once the symptoms of hypoxia appear |
| 270. | You have been scuba diving below 10m. When can you next fly   | after 12 hours                                       | after 24 hours   | after 48 hours  | Whenever you wish   |
| 271. | As the body ascends, the partial pressure of oxygen within the lungs  | decreases at a rate of 3 times the atmospheric rate  | decreases at the same rate as that of the atmosphere                                       | stays the same  | increases   |

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| 272. | TUC at 25,000 with moderate activity and rapid decompression is approximately   | 2 minutes   | 30 seconds to 5 minutes  | 2.5 minutes to 6 minutes   | 5 to 10 minutes                                     |
| 273. | Hyperventilation can cause  | too much oxygen to the brain  | spasms in the muscles and possible unconsciousness                     | bluish tinge under the nails of the fingers and the lobes of the ears                      | a feeling of euphoria                               |
| 274. | How much air is inhaled and exhaled in one breath ?   | 70 mls  | 150 mls  | 350 mls  | 500 mls   |
| 275. | If you are suffering from hyperventilation, what should you do  | close your eyes and relax   | breathe 100% oxygen  | talk through the procedure out loud and simultaneously control rate and depth of breathing | make an immediate landing                           |
| 276. | Hyperventilation can, after a long period of time, lead to unconsciousness due to   | high level of carbon dioxide due to hypoxia                             | low partial pressure of oxygen to the brain                            | the body compensates for low partial pressure of oxygen                                    | prolonged anxiety/stress                            |
| 277. | A pilot who is hyperventilating for a prolonged period of time may become unconscious. Hyperventilation is likely to occur when | The pilot is stressed or anxious  | There is an excess of carbon dioxide in the blood due to hypoxia       | Flying a tight turn  | There is an increased blood flow to the brain.      |
| 278. | Hyperventilation is likely to occur as a result of  | The body attempting to compensate for a drop in partial oxygen pressure | An accelerated heart frequency caused by an increase in blood pressure | Over-breathing, leading to too much carbon dioxide in the blood                            | A reduction of partial oxygen pressure to the brain |
| 279. | What can cause hypoxia  | Anaemia   | high intake of nitrogen  | high solar radiation   | because of the lower percentage of oxygen           |

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|      |  |  |  |  | at height  |
| 280. | One of the results of DCS is the "Chokes". The chokes causes problems in the   | joints   | lungs  | brain  | heart  |
| 281. | If suffering from Hypoxia you should 1) descent to below 10,000ft. 2) climb above 10,000ft. 3) go onto 100% oxygen 4) reduce activity                      | 1 only   | 1 , 3 & 4  | 4 only   | 2 ,3 & 4   |
| 282. | Which of the following is a correct statement with regards to carbon monoxide'!  | Breathing pure oxygen reduces the effects of carbon monoxide | Haemoglobin has an affinity to carbon monoxide over oxygen of 5 times                      | Carbon monoxide poisoning can result from nicotine                 | Carbon monoxide increases the altitude at which hypoxia is experienced prevalent |
| 283. | Which of the following can cause hypoxia? 1) Ascent to altitudes over 10,000 feet 2) Failure of the oxygen system 3) Rapid decompression above 10,000 feet | All 3  | 1 and 2 only   | 2 and 3 only   | 1 and 3 only   |
| 284. | Hypoxic Hypoxia  | can occur at any altitude.                                   | only occurs at altitudes over approximately 10,000 ft. in the case of a healthy individual | is caused by the inability of the blood to carry sufficient oxygen | is not affected by smoking   |
| 285. | One of the outcomes of rapid decompression is  | Regression   | A collapse of the of the middle ear  | Cyanosis   | Fogging/Misting  |
| 286. | Hypoxia is caused by 1) a decrease in the saturation of oxygen in  | 1 and 2 only   | 4 only   | 1, 2 3 and 4   | 1 & 4 only   |

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|      | the blood due to intake of carbon monoxide 2) an inability of the body to metabolize oxygen 3) the effects of Gz due to inertia and pooling of the blood 4) low partial pressure of oxygen at high altitudes without supplemental oxygen |   |                                     |                                       |  |
| 287. | TUC for progressive decompression at 30,000 ft is  | 1 - 2 minutes                               | 3 - 5 minutes                       | 5 - 10 minutes                        | 15 - 20 minutes                                    |
| 288. | While turning the aircraft the pilots moves his/her head. What effect might the pilot be exposed to  | Coriolis Effect                             | Somatogravic Effect                 | Flicker Effect                        | Oculogravic Effect                                 |
| 289. | On initiating recovery from a spin, the pilot may have a strong sensation of turning   | In a direction opposite to that of the spin | In a direction the same as the spin | Slowly upwards                        | Quickly upwards                                    |
| 290. | Presbycusis causes loss of   | High tones                                  | Low tones                           | Both equally                          | Can be prevented by ear plugs                      |
| 291. | To prevent Vertigo in flight one should:   | Use the Valsalva manoeuvre                  | Look to one side while turning      | Avoid moving ones head whilst turning | Breathe deeply, but control frequency of breathing |
| 292. | Presbycusis is loss of hearing due to age and which effects  | high tones first                            | low tones first                     | medium tones first                    | the whole spectrum of tones at the same time       |
| 293. | Excessive wax the ear is classed as  | NIHL  | Conductive Deafness                 | Presbycusis                           | Physical Deafness                                  |

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| 294. | Perceptual conflict between the Vestibular Apparatus and the visual sensory inputs 1) can occur when flying IMC and may be compelling 2) can cause attitude misinformation 3) may occur when taking off bank following a sustained turn 4) can occur when decelerating | 1, 2 and 3  | 2, 3 and 4  | 1, 3 and 4                                 | 1, 2, 3 and 4                                   |
| 295. | What is a stereotype and involuntary reaction to a stimulation ?   | data control                                      | a reflex  | stimulation control                        | automatic stimulation                           |
| 296. | How many semi-circular canals are contained in the ear ?   | 1   | 2   | 3  | 4   |
| 297. | Vertigo can be associated with   | The Coriolis Effect                               | Autokenesis                                       | sweating                                   | shivering                                       |
| 298. | Hearing through bone conduction  | by-passes the inner ear                           | by-passes the outer ear                           | by-passes outer and the middle ear         | is no different from the normal hearing process |
| 299. | With regards to the harmful effects of intensive noise on human performance  | High frequency cause more harm than low frequency | Low frequency cause more harm than high frequency | Medium cause more harm than high frequency | Frequency is not important                      |
| 300. | The amount of light entering the eye is controlled by  | The Central Nervous System                        | The Peripheral Nervous System                     | The Autonomic (Vegetative) Nervous System  | The Secondary Nervous System                    |
| 301. | When turning in IMC,   | autokinesis                                       | the oculogyral                                    | vertigo                                    | Coriolis effect                                 |

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|      | head movements should be kept to a minimum to prevent :                   |  | illusion  |  |  |
| 302. | Spatial disorientation is when :  | The pilot's seat harness is too tight not allowing the pilot to sense the aircraft's attitude changes                      | There is a mis-match between the information received from the vestibular apparatus and the instruments | The pilot is ignoring illusions                                      | Information from the vestibular apparatus is ignored                 |
| 303. | When a pilot looks at a near object , the :                               | Lens flattens  | Pupil becomes smaller   | Cornea becomes more curved   | Cornea changes shape   |
| 304. | Which light sensitive cells of the eye are used for night vision ?        | Cones  | Rods  | Cones and Rods   | None of the above  |
| 305. | Sunglasses with variable transmission light sensitive Photochromic lenses | can be disadvantageous when used in the cockpit due to their dependence on UV light which is screened by the cockpit glass | are advantageous for pilots   | are generally forbidden for use in flight                            | are ideal as long as they are polarized                              |
| 306. | The eye can adjust to:  | High levels of illumination in 10 minutes and darkness in 30 minutes   | High levels of illumination in 10 seconds and darkness in 30 minutes                                    | High levels of illumination in 30 minutes and darkness in 10 minutes | High levels of illumination in 30 minutes and darkness in 10 seconds |
| 307. | When the visual image is focused in front of the retina the condition is: | Myopia   | Hypermetropia   | Presbycusis  | Astigmatism  |
| 308. | A person suffering from Glaucoma will have                                | cloudiness of the lens   | cloudiness of the cornea  | increased pressure of the eye  | colour blindness   |

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| 309. | Glaucoma is caused by  | excess pressure within the eye   | a clouding of the lens  | damage to the cornea  | damage to the retina  |
| 310. | Good quality sunglasses provide  | the ability to react to varying light levels automatically.  | good luminance characteristics, avoidance of glare and harsh shadows, protection against UV and IR and equal absorption of colours. | for the pilot's individual needs.   | no distortion of aircraft windscreens.  |
| 311. | The Rods and Cones of the eye converts light energy to   | Electrical nerve signals   | Chemical nerve signals  | Chemical and motor nerve signals  | Chemical and sensory nerve signals  |
| 312. | What is essential for seeing colour? 1) Correct light levels 2) Time to adjust 3) Looking 15° to one side of the object 4) No white lights | 1 only   | 1 & 2 only  | 1, 2 and 4 only   | 3 only  |
| 313. | As light decreases, the colour sensitivity of the eye  | increases  | decreases   | is not affected   | magnified   |
| 314. | The retina   | receives electromagnetic energy and, through photochemical reactions, converts it into photochemical signals | receives light and, through electrical reactions, converts it into electrical signals   | receives light and, through electromagnetic reactions, converts it into photochemical signals | receives light signals and, through photochemical reactions converts them into chemical signals in the form of pulses |
| 315. | Accommodation is triggered by the  | The Secondary Nervous System   | The Peripheral Nervous System   | The Central Nervous System  | The Autonomic (Vegetative) Nervous System   |

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| 316. | Scotopic vision is vision via the  | cones   | rods   | cones and the rods                               | cornea and the lens                            |
| 317. | What part or parts of the eye is/are responsible for night vision ?                  | The cones   | The rods   | The rods and cones                               | The cornea                                     |
| 318. | What is the worse type of incapacitation on finals                                   | Sudden  | Severe   | Intensive  | Gradual  |
| 319. | The metabolism of alcohol is   | Influenced by time  | Accelerated by drinking coffee   | Quicker when the body gets used to alcohol       | Improved by the use of easy-to-get medication. |
| 320. | Should a pilot fly with a bad cold he/she could suffer from                          | Chokes  | Bends  | Sinus pain                                       | Blurred vision                                 |
| 321. | Even with a small ingestion of alcohol   | the brain will be stimulated thereby increasing the resistance to hypoxia | the brain functions will be increased and thereby increasing performance at high altitudes | the pilot will remain unaffected                 | the pilot will be more susceptible to hypoxia  |
| 322. | Pain in the cavities of the skull which accompanies a change of altitude is known as | Staggers  | Bends  | Barotrauma                                       | Creeps   |
| 323. | With regard to alcohol   | Does not effect performance   | Even a small amount will effect performance  | Drinking coffee with alcohol reduces the effects | It effects Orthodox sleep                      |
| 324. | If you switch on the anti-collision light in IMC, what are the likely effects ?      | Depth perception increases  | You can suffer from dizziness and disorientation   | You can suffer from Colour Illusion              | Binocular vision is affected                   |
| 325. | Most ozone is found in the   | Thermosphere  | Ionosphere   | Stratosphere                                     | Troposphere                                    |

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| 326. | You suffer pain in an ear on a descent. Should you  | Put one hand over the effected ear      | Level off and, if necessary, climb to the level where it first occurred | Increase the rate of descent                            | Keep the head still and continue descending at a slower rate       |
| 327. | The metabolism of alcohol   | is affected by time                     | can be affected by caffeine   | is reduced by readily available drugs                   | does not occur in the human body                                   |
| 328. | What is the first symptom of high radial acceleration ?   | Grey out                                | Unconsciousness   | Red out   | Black out  |
| 329. | In tropical regions you should  | Ensure you put ice into all cold drinks | Drink only from sealed containers                                       | Eat raw vegetables whenever possible                    | Ensure you eat unpeeled fruit because of possible vitamin loss     |
| 330. | Which of the following are among the symptoms of Otic Barotrauma in one or both ears?                     | Noise                                   | Increase of pressure in the ear causing pain                            | Dizziness   | The Bends  |
| 331. | To avoid hypoglycemia   | A pilot should not eat a meal           | A pilot should not eat sugar or sweets                                  | A pilot should eat regularly and ensure a balanced diet | A pilot should eat peanuts because they produce high energy levels |
| 332. | Alcohol is a  | Peripheral Nervous System stimulant     | Central Nervous System stimulant  | Central Nervous system depressant                       | Vegetative System stimulant  |
| 333. | Ozone in a pressurized cabin can be eliminated by   | Spraying detergents                     | Climbing to an altitude above 45,000 ft                                 | Avoiding flights above the equator                      | Using ozone-converters   |
| 334. | The first effect on the human being subjected to gradual exposure of high positive radial acceleration is | loss of consciousness                   | black-out   | red-out   | grey-out   |

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| 335. | Concerning barotrauma which of the following statements is true ?                        | Baratrauma is associated with a sink rate which is greater than the ability of the body to balance its internal pressures | Baratrauma is caused by pressure differentials between the ambient pressure and the gases in the cavities of the body | Baratrauma is more likely to happen in the ascent than the descent | Baratrauma is caused by a decrease in altitude associated with an increase in the partial pressure of oxygen |
| 336. | Anxiety affects 1) Judgement 2) Attention 3) Memory 4) Concentration                     | 1 & 2 only  | 1 only  | 1, 2 & 4   | All  |
| 337. | Hypothermia causes a   | Decrease in the demand for oxygen   | Increase in the demand for oxygen and eventually leads to unconsciousness   | Increase in the demand for oxygen                                  | None of the above  |
| 338. | When faced with a problem a pilot should :   | Take as much time as he/she needs within the available time to make up his/her mind                                       | Make up his/her mind as quickly as possible to give as much spare time as possible                                    | Make up his/her mind before consulting other crew members          | Wait until the last minute to make up his/her mind   |
| 339. | Stressors are  | External factors only   | Internal factors only   | Both external and internal factors                                 | Neither external nor internal factors  |
| 340. | Performance can be increased by  | putting a student pilot under stress  | a moderate amount of stress   | no stress at all if possible                                       | ignoring stress as all good pilots leave stress on the ground  |
| 341. | At height cockpit humidity can be between  | 20-25%  | 40-60%  | 30-60%   | 5-15%  |
| 342. | If in a state of stress which is impossible to overcome, the pilot will be in a state of | Eustress  | Hypertension  | Distress   | Regression   |

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| 343. | A person that is exposed to extreme or prolonged stress factors can perceive: | Distress                                    | Eustress   | Coping stress   | Stressors   |
| 344. | What is the relationship between stress and fatigue ?                         | No stress and no fatigue is good            | All stress and fatigue is good   | Stress can be good, fatigue is always bad   | No stress and some fatigue is good                            |
| 345. | The body loses water via  | The skin, lungs and kidneys                 | The skin   | The skin, lungs and liver   | The skin, liver and kidneys                                   |
| 346. | Extreme cold may be associated with   | Aggression                                  | Aggression and anxiety   | Anxiety   | Contentment or apathy   |
| 347. | An individual's perception of stress  | depends on the current situation only       | is the objective evaluation of a situation and the perceived ability to cope with it | is the subjective evaluation of a situation and the perceived ability to cope with it | depends on the individual's arousal                           |
| 348. | Stress Management strategies normally involve                                 | Only the prevention of stress               | Only the removal of stress   | the use of drugs  | the prevention and the removal of stress                      |
| 349. | If the sensory threshold is increased   | Selectivity is increased                    | Selectivity is decreased   | Sensitivity is reduced  | Sensitivity is increased                                      |
| 350. | Which of the following is correct   | Hearing is the most important sense for man | 'The Kinesthetic channel is the most important channel in flying                     | 70% of information processed by man enters the visual channel                         | 40% of information processed by man enters the visual channel |
| 351. | The learning process can be facilitated by                                    | Reinforcing successful endeavours           | Punishing errors   | Increasing psychological pressure on the student                                      | Encouraging the student to make mistakes                      |
| 352. | Motor programmes  | are stored as rules in the long term memory | are behavioural sub-routines   | require conscious thought to engage   | are natural reactions   |
| 353. | What error rate can be expected to be given reasonable training ?             | 1 in 100,000                                | 1 in 10,000  | 1 in 1,000  | 1 in 100  |

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| 354. | What human error rate is considered to be the norm ?            | 1 in 10  | 1 in 100   | 1 in 1,000   | 1 in 10,000  |
| 355. | Age   | generally decreases pilot's performance  | generally increases pilot's performance  | generally has little effect on pilots' performance since it is compensated for by experience                                   | generally increases performance until approximately the age of 32 and therefore generally decreases performance                              |
| 356. | The thinking concerning human error has changed recently to     | Human error is inherent and inescapable  | It has been accepted that human error will always be made but can be decreased by training and technology.         | Error can be eliminated completely in the future   | Human error can be avoided through vigilance and expansion of knowledge  |
| 357. | Over learning   | improves the chance of recall and makes the performance of a task more resistance to stress and is an important concept of aviation training | is a process which is discouraged in the aviation training as it may lead to "Regression" in times of acute stress | is a process in training which is usually adopted in order to pass complicated concepts to a recipient of limited capabilities | is the process whereby information is layered and linked with previously learned facts and is an important tool to improve Short-term Memory |
| 358. | Mental models of the world are based on                         | past experiences and sensory information   | past xperiences only   | past experiences and motor programmes (skills)   | only sensory information   |
| 359. | Mental models are based upon                                    | entirely on past experiences   | past experiences and motor programmes  | sensory information only   | past experiences and sensory information received  |
| 360. | Once a mental model is constructed, there is a tendency to give | undue weight to information that contradicts the   | equal weight to information that contradicts and   | frequent alterations to the mental model   | undue weight to information that confirms the model  |

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|      |   | model  | confirms the mental model               |   |  |
| 361. | Motor programmes save resources and therefore attention however they may result in  | errors in selecting the correct plan of action | errors in decision-making               | routine errors                                      | istakes                                    |
| 362. | Mental rehearsal is useful for  | all pilots                                     | instructor pilots only                  | only for pilots with a specific level of experience | student pilots only                        |
| 363. | When problem-solving, what determines the transition from rule-based activities to knowledge-based activities                       | Knowledge of rules that apply for the problem  | Unsuitability of automated actions      | Unsuitability of known rules for the problem posed  | Lack of knowledge of the rules             |
| 364. | When do we change from Rule Based Behaviour to Knowledge Based Behaviour ?  | When we choose to do so                        | When we do not know the rules           | When rules do not apply                             | When we become highly experienced          |
| 365. | Very high ambition and drive for success can lead to  | conflict in the cockpit                        | improved performance                    | a "laiser faire" cockpit situation                  | improved cohesion and mutual consideration |
| 366. | With respect to the subcutaneous pressure receptors, they sense   | The condition of the body                      | Spatial orientation of the body         | Pressure on the body indicating true vertical       | Environmental conditions                   |
| 367. | A pilot is accustomed to a runway with a width of 27m and lands on an unfamiliar runway with a width of 42m. The pilot will tend to | Fly a too high an approach and overshoot       | Fly a too low an approach and overshoot | Fly a too high an approach and undershoot           | Fly a too low an approach and undershoot   |

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| 368. | When staring at an isolated light at night, the light may appear to                       | vary in size   | move   | vary in colour                                       | vary in intensity   |
| 369. | Illusions that pilots experience in conditions of fog, snow or mist are that              | Objects appear further away than they really are         | Objects appear closer than they really are         | Objects appear to move slower than they really do    | Objects appear to move faster than they really do                           |
| 370. | Cognitive illusions are caused by:  | Poor interpretation of cockpit instruments               | Lack of external reference points                  | Conflict between different senses                    | Erroneous mental model resulting from a misinterpretation of sensory inputs |
| 371. | What should you do if disorientated at night:   | Ignore your instruments                                  | Look at the horizon                                | Descend  | Rely on your instruments  |
| 372. | The illusion that the aircraft is taxiing too fast can be caused by                       | Snow and a tailwind                                      | Snow and a tail wind                               | Rain and a headwind                                  | A unaccustomed high distance of the cockpit from the ground                 |
| 373. | Errors in the judgment of height on an approach are more likely over                      | snow   | mountains  | jungle   | rough seas  |
| 374. | What is the illusion when an aircraft is flying in fog, snow or haze ?                    | Objects appear to be further away than they actually are | Objects appear to be closer than they actually are | Objects appear to move faster than they actually are | Objects appear to be larger than they actually are                          |
| 375. | What is the normal illusion for a pilot undertaking an approach on an up-sloping runway ? | The aircraft is too high                                 | The aircraft is too low                            | The aircraft is too fast                             | The aircraft is too slow  |
| 376. | On an approach at night in rain onto a runway with approach lighting it is it not         | Slower than it actually is                               | Faster than it actually is                         | normal   | curved  |

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|      | unusual for the approach to appear  |   |   |   |  |
| 377. | Input for orientation is through 1) Eyes 2) Utricles & Saccules 3) Semi-circular canals 4) Seat-of-the-pants receptors            | 2 & 3 only  | 3 & 4 only  | 1, 2 & 4 only                                     | 1,2,3& 4   |
| 378. | A pilot flies to Moscow (2 hours ahead of home time) with a 4 day stop-over. After 3 days his/her circadian rhythm corresponds to | Local time  | Home time   | Central Europe time                               | UTC  |
| 379. | What characterizes a self-centered cockpit ?  | Autocratic Captain assures a synergistic cockpit              | Crew member tends to do their own jobs independently without keeping other informed | A synergistic cockpit                             | A non-synergistic cockpit in which the Captain tends to be authoritarian                           |
| 380. | Attitude is   | a synonym of behaviour  | a genetic predisposition to be biased either positively or negatively               | acting and thinking subjectively                  | How a person responds to another person, situation or organisation either positively or negatively |
| 381. | Personality is based on: 1) Heredity 2) Childhood 3) Upbringing 4) Experience   | None of the above   | 1, 2, and 4.  | All of the above                                  | 2, 3 and 4   |
| 382. | During the pre-flight brief the aircraft commander should:  | Delegate all duties to all crew members for the entire flight | Emphasise that he/she is in charge  | Emphasise areas requiring good crew co-ordination | Ensure all points are covered for the flight to avoid repetition in the cockpit?                   |

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| 383. | Attitude is   | part of personality and cannot be changed in an adult             | a person's response to a situation, person or object                | the same as behaviour  | stable and cannot be changed in an adult   |
| 384. | Leadership qualities should include 1) A dominant style 2) Laiser Faire 3) Technical competency 4) Good communications  | 1, 2, 3 and 4   | 1 & 2 only  | 2 only   | 3 & 4 only   |
| 385. | During the cruise, the Captain of an aircraft starts to smoke a cigarette. The co-pilot is a nonsmoker and asks him to stop. The Captain ignores his request saying "That's your problem". What the co-pilot do about the situation ? | He should call one of the cabin crew and ask him/her to arbitrate | He should argue with the Captain pointing out the potential dangers | He must accept his Captain's behaviour since it is the Captain who is responsible. | He should stop discussion and return to the issue during the debrief at the end of the flight. |
| 386. | Which of the following statements is correct ?  | Personality is easily changed                                     | Attitudes do not change in the long-term                            | Behaviour is the outward result of personality and attitude                        | Attitude is the outward result of behaviour and personality                                    |
| 387. | Metacommunications:   | are of no importance in the cockpit                               | are shortcuts   | are barriers to inter-conflict   | compliment verbal communications   |
| 388. | What is not a useful element of good feedback ?   | Tailor to the individual  | Enable response and discussion                                      | Specifically target each individual's failings                                     | Should be understood by all  |
| 389. | What constitutes effective communications ?   | Speaking in a variety of mother tongues                           | Using different context which would be understood by the            | Considering cultural differences   | Using commonly understood context, language and  |

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|      |   |  | receiver   |   | metacommunications   |
| 390. | What is the main purpose of pre-flight briefings ?  | To allow the Captain to assert his/her authority   | To allow individual crew member to prepare their own responses to likely or problematic events | They form general information about the flight but they contain no specific reference to likely or problematic events | They form information about the flight and allocate responsibilities and reactions to likely or problematic events |
| 391. | Pilots should   | have a good command of the English language  | have at least a limited English vocabulary   | be able to understand key words and phases only since these are sufficient to sufficiently impart meaning             | be able to have a command of a local language since this is sufficient and legal in an emergency                   |
| 392. | Which of the following elements of communications is most likely to lead o misunderstanding ?                                 | Coding and decoding a message  | The Receiver's mood  | Expectation (What you expect to hear )  | The Sender's nationality   |
| 393. | In communication which element shows that information has been received and understood ?                                      | Encoding   | Decoding   | Feedback  | Synchronization  |
| 394. | With regards to anticipation, which of the following would most likely to result in the occurrence of a hazardous situation ? | mishearing the contents of an air traffic controller's non-standard clearance when a standard procedure was anticipated. | anticipation of a check list   | anticipation of weather   | anticipation of a longer flight time than expected   |
| 395. | Which of the following statements are correct with reference to   | Automation increases Situational   | Enables the pilot to respond to unusual situations better since                                | Reduces pilot's attention since they can be out of the loop   | Saves time   |

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|      | automation ?   | Awareness   | there is no need to monitor automatics.  |  |   |
| 396. | Murphy's Law states that   | Even if a system can be designed correctly, it will always be mis-used        | If a system can be operated incorrectly, sooner or later it will be                                | If a system can be operated incorrectly it should be guarded   | If a system can be operated incorrectly it should be backed up by a second system |
| 397. | The alerting system for an important system failure should be  | a flashing visual signal - preferably red                                     | a doll's eye indicator   | an audio warning   | a steady visual signal - preferably red   |
| 398. | What would be the priority aim in the design of man/machine interface in combating the occurrence of Human Error ? | To eliminate latent errors  | To minimize the consequences of the appearance or non-appearance of errors with respect to safety  | To systematically analyze the occurrences of errors to improve the future design of systems and ergonomics | To generate clear warnings and alerts   |
| 399. | Check lists are most important when  | flying an aircraft which you have flown many times before.                    | flying an aircraft with which you are not familiar and when under stress                           | conducting a long flight   | flying an aircraft in which you are current                                       |
| 400. | SOP's in the cockpit must  | only be tailored to the type of aircraft regardless of current MCC procedures | follow implicitly the manufacturer's suggestions and not reflect the Operator's cockpit procedures | be shared by the members of the crew and modified/updated so as to maintain as much synergy as possible    | be tailored to the individual pilot's needs and requirements                      |
| 401. | The term 'complacency' means   | to query and double-check possible solutions                                  | synergy between the co-pilot and the Commander emanating from CRM procedures                       | physiological problems resulting from the fear of flying   | unjustified self-confidence resulting in careless negligence                      |
| 402. | One of the negative aspects of automation is   | It can lead to complacency of the aircrew                                     | Pilots tend to be overloaded when trying to monitor the  | Crews become less experienced because the ease of control  | Pilots tend to disregard the equipment  |

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|      |   |   | equipment   |   |  |
| 403. | With reference to decision-making, it is  | An automatic function   | Conscious and voluntary after assessing the options                               | An arbitrary decision   | A systematic and analytical process                                    |
| 404. | A efficient flight deck crew is one which   | respect each other's decision and views                                     | is a constituted crew   | respect each other's political and religious persuasions              | is laiser faire  |
| 405. | Confirmation Bias of the decision-making process is   | To ignore information which indicates that a hypothesis or decision is poor | Not to seek information which confirms the decision                               | Not to look for information which would reassure the correct decision | To look for facts that confirm expectations before making a decision   |
| 406. | The semi-circular canals react to   | Linear acceleration   | Heat  | Temperature   | Angular acceleration   |
| 407. | With what is "Mode Error" associated ?  | Leadership  | Motivation  | Automation  | Homeostasis  |
| 408. | Why is it essential to ensure that the combustion heater is serviceable in an aircraft ?  | To prevent carbon dioxide poisoning and possible fire                       | To prevent carbon dioxide poisoning, possible fire or explosion                   | To prevent carbon dioxide poisoning                                   | To prevent carbon monoxide poisoning                                   |
| 409. | Short term memory (Working Memory) can be improved through  | practice and retrieval  | chunking and association  | rehearsal and practice  | rehearsal and retrieval  |
| 410. | The Systolic pressure is higher than the Diastolic pressure and the normal reading for a healthy person is 120/80. High blood pressure can lead to strokes. | True  | The above is false as the Diastolic pressure is higher than the Systolic pressure | The above is false as the normal reading is 250/90                    | The above is false since high blood pressure can lead to heart attacks |
| 411. | Approximately   | 50  | 95  | 20  | 70   |

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|      | .....% of all accidents are caused by Human factors  |   |   |   |   |
| 412. | Linear acceleration may give a false impression of a   | Climb   | Descent   | Turn  | Spin  |
| 413. | The law that states "Providing the temperature is constant, the volume of gas is inversely proportional to its pressure" is        | The Combined Gas Law  | Henry's Law   | Dalton's Law  | Boyle's Law   |
| 414. | The Time of useful consciousness (TUC) at 43,000 ft in the event of progressive decompression for sitting and moderate activity is | 30 and 15 seconds   | 30 and 25 seconds   | 18 and 12 seconds   | 40 and 20 seconds   |
| 415. | When suffering from Hypoxic Hypoxia short-term memory impairment starts at approximately   | 10,000 ft   | 12,000 ft   | 14,000 ft   | 16,000 ft   |
| 416. | A free running circadian rhythm exhibits a periodicity of approximately  | 23 hours  | 24 hours  | 25 hours  | 26 hours  |
| 417. | What is the relationship between personality, attitude and behaviour   | Behaviour is the outward result of personality and attitude | Personality is the outward result of behaviour and attitude | Attitude is the outward result of personality and behaviour | There is no relationship. Personality is derived from genes whereas behaviour and |

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|      |   |   |   |   | attitude are learnt   |
| 418. | The Vestibular Apparatus consists of the                      | Cochlea and the auditory nerve  | Eustachian tube and the semi-circular canals                            | Semi-circular canals and the otoliths   | Eustachian tube and the pinna   |
| 419. | To overcome disorientation in IMC conditions it is advised to | Look out at the horizon   | Believe the instruments   | Keep the head as still as possible  | Get relief from look-out duties   |
| 420. | Our primary source of spatial orientation is                  | Sight   | The ears  | The Cortex  | The Cerebellum  |
| 421. | Co-action is a form of co-operation that can be defined as    | working in parallel towards a common goal                                   | working in parallel towards separate goals                              | working independently   | duplicating actions   |
| 422. | Among the factors which affect night vision are               | Age, cabin altitudes above 8,000 ft, age, smoking and alcohol               | Age, cabin altitudes above 8,000 ft, age, smoking and lack of vitamin C | Age, cabin altitudes above 8,000 ft, age, smoking and lack of vitamin D         | Age, cabin altitudes above 8,000 ft, age, smoking and lack of vitamin B |
| 423. | The twin objectives of Human Performance are                  | Knowledge of the limitations of the body and their significance in aviation | Flight Safety and self-awareness  | The safety and efficiency of the operation and the well-being of the individual | Physical fitness and good decision-making                               |
| 424. | Haemoglobin is manufactured mainly in the                     | Liver   | Heart   | Bone Marrow   | Capillaries   |
| 425. | Normal cabin pressure is                                      | 10,000 ft.  | 5,000 ft  | 3,000 ft - 4,000 ft   | 6,000 ft - 8,000 ft   |
| 426. | To be restorative a nap must last for at least                | 5 minutes   | 20 minutes  | 1 hour  | 2 hours   |
| 427. | The function of the Eustachian tube is to                     | Equalise the pressure between the outer and                                 | Equalise the pressure between the outer and inner ear                   | Equalise the pressure between the inner and middle ear                          | Equalise the pressure between the tympanum and the                      |

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|      |   | middle ear   |   |  | inner ear  |
| 428. | If you wear contact lenses while flying, you must also  | Inform the company aviation medical specialist of your condition | Make sure that they are correctly oiled, cleaned and maintained | Take a spare pair of contact lenses with you and ensure they are immediately available | Take a pair of ordinary corrective spectacles with you and have them immediately available |
| 429. | Generally the most common cause of accidents to aircraft is   | CFIT   | MAYDY   | RADA   | EMERG  |
| 430. | Stimuli must be of a certain strength for the receptors to pick them up. This is called   | Sensory threshold  | Sensory filter  | Sensory strength   | Sensory volume   |
| 431. | The main limitation of the Central Decision-maker is  | It is dual channelled processing                                 | It is single channelled processing                              | It is slow   | It multi channelled processing   |
| 432. | The Cocktail Party Effect is an example of  | Selective attention  | Divided attention   | Selective Communication  | Divided Communication  |
| 433. | What 2 factors will bring a person temporarily from the Automatic phase stage of a motor programme into the Associative stage ? | Fatigue and stress   | Lack of practice and stress                                     | Loss of Situational Awareness and fear   | Anxiety and fatigue  |
| 434. | A smoker travelling in a non-pressurised aircraft to a height of over 10,000ft will suffer from:                                | Hypoxic hypoxia only   | Anaemic hypoxia only  | Anaemic and hypoxic hypoxia  | The Coriolis effect  |
| 435. | What happens to the Systolic blood pressure   | Systolic blood pressure rises                                    | Systolic blood pressure decreases                               | Systolic blood pressure is unaffected  | Systolic blood pressure initially  |

|                    | if peripheral resistance is increased ?   |   |  |  | decreases and then increases                |
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| 436.               | What is the ideal personality for a pilot ?   | G+ P+   | A team player  | Stable Extravert   | Synergistic                                 |
| <b>Meteorology</b> |   |   |  |  |   |
| SL NO              | Question  | Option_1  | Option_2   | Option_3   | Option_4                                    |
| 1.                 | The international standard atmosphere assumes a lapse rate of:  | 2°C/1000 ft   | 1.5°C/1000 ft  | 3°C/1000 ft  | 1.98°C/1000 ft                              |
| 2.                 | The tropopause is:  | The line where the temperature no longer decreases with increase of height. | The layer between the tropopause and the stratosphere. | The layer beyond which only Ci cloud occurs.                     | The line indicating clear air turbulence.   |
| 3.                 | One of the most important characteristics of the atmosphere is:   | Density is constant above 10 000 ft.  | The air is a poor conductor of heat.                   | Temperature lapse rate is very frequently above 3°C per 1000 ft. | The air is a good conductor of heat.        |
| 4.                 | The captain of an aircraft needs to know the height of the Tropopause because:                            | it normally represents the limit of weather                                 | density starts to increase                             | there are no longer jet streams and CAT                          | it indicates the height of the thermal wind |
| 5.                 | The level in the atmosphere where the air temperature ceases to fall with increase in height is known as: | The troposphere.  | The Stratopause.                                       | The Stratosphere.  | The tropopause.                             |
| 6.                 | The atmosphere is a mixture of gasses of the following  | oxygen 21%<br>nitrogen 78%<br>other gasses 1%                               | oxygen 21% hydrogen 78% other gasses 1%                | nitrogen 78% argon 21 % oxygen 1                                 | nitrogen 78% oxygen 21 % hydrogen 1         |

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|     | proportions:   |   |   |   |   |
| 7.  | The International (ICAO) Standard Atmosphere assumes that the sea level atmospheric pressure is: | 1013.25 mbs and decreases with an increase in height  | 1013.25 mbs and increases with an increase in height  | 1013.25 mbs and falls to about half this value at 30000   | 1013.25 mbs and decreases with an increase in height up to the tropopause. Above the tropopause it remains constant |
| 8.  | At sea level the ISA density is stated to be:  | 1225 grammes per cubic metre  | 1252 grammes per cubic metre  | 1013.2 mb (hpa)   | 29.6 inches of mercury  |
| 9.  | Which of the following statements is most correct when describing ISA:                           | the MSL pressure is 1013.25 mbs and the temperature is +15°C  | the MSL pressure is 1013.25 mbs and the temperature is +15° C with a lapse rate of 1.98°C/1000 ft | the MSL pressure is 1013.25 mbs and the temperature is +15° C with a lapse rate of 1.98°C/1000ft up to 36090 ft above which there is frequently an 'inversion | the MSL pressure is 1013.25 mbs and the temperature is +15° C with a lapse rate of 1.98°C/1000 ft up to 36090 ft    |
| 10. | The following is true for the International Standard Atmosphere:                                 | at mean sea level the following conditions prevail: temperature +15° C, pressure 1013.25 hpa, density 1125 gm/m | within the troposphere the temperature decreases by 6.5° C per km                                 | the tropopause is at a height of 36090 AGL  | the temperature at the tropopause is 226.5°K  |
| 11. | The barometric Pressure at the airfield datum point is known as:                                 | QNE   | QNH   | QFE   | Standard Pressure   |
| 12. | The instrument that gives a continuous printed reading and record of the                         | barometer   | hygrometer  | anemograph  | barograph   |

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|     | atmospheric pressure is:  |   |   |  |   |
| 13. | The pressure of the atmosphere:   | decreases at an increasing rate as height increases                             | decreases at a constant rate as height increases  | decreases at a decreasing rate as height increases   | decreases at a constant rate up to the tropopause and then remains constant |
| 14. | When considering the actual tropopause which statement is correct:  | it is low over the poles and high over the equator                              | it is high over the poles and low over the equator  | it is the same height of 36090 ft all over the world   | It is at a constant altitude of 26000'                                      |
| 15. | Atmospheric pressure may be defined as:   | the weight of the atmosphere exerted on any surface with which it is in contact | the weight of the atmosphere at standard sea level  | the force per unit area exerted by the atmosphere on any surface with which it is in contact                     | a pressure exerted by the atmosphere of 1013.2 mbs                          |
| 16. | The QFF is the atmospheric pressure:  | at the place where the reading is taken   | corrected for temperature difference from standard and adjusted to MSL assuming standard atmospheric conditions exist | at a place where the reading is taken corrected to MSL taking into account the prevailing temperature conditions | as measured by a barometer at the aerodrome reference point.                |
| 17. | With 1013.25 mb set on the altimeter sub scale with an aircraft stationary on the airfield the altimeter will read: | QNE   | QNH   | QFE  | QFF   |
| 18. | The aircraft altimeter will read zero at aerodrome level with which pressure setting set on the altimeter           | QFF   | QNH   | QNE  | QFE   |

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|     | sub scale:   |   |   |   |   |
| 19. | You are passed an altimeter setting of '29.53'. You would then set your altimeter subscale to:                       | QFF   | 1013  | 1000  | QFE   |
| 20. | The aerodrome QFE is:  | the reading on the altimeter on an aerodrome when the aerodrome barometric pressure is set on the sub scale | the reading on the altimeter on touchdown at an aerodrome when 1013.2 is set on the sub scale | the reading on the altimeter on an aerodrome when the sea level barometric pressure is set on the sub scale | the aerodrome barometric pressure.          |
| 21. | When an altimeter sub scale is set to the aerodrome QFE, the altimeter reads:  | the elevation of the aerodrome at the aerodrome reference point   | zero at the aerodrome reference point   | the pressure altitude at the aerodrome reference point  | the appropriate altitude of the aircraft    |
| 22. | The aerodrome QNH is the aerodrome barometric pressure:  | corrected to mean sea level assuming standard atmospheric conditions exist                                  | corrected to mean sea level, assuming isothermal conditions exist                             | corrected for temperature and adjusted to MSL assuming standard atmosphere conditions exist                 | corrected to MSL using ambient temperature. |
| 23. | A line drawn on a chart joining places having the same barometric pressure at the same level and at the same time is | an isotherm   | an isallobar  | a contour   | an isobar                                   |
| 24. | The tropopause in mid latitudes is:  | Lower in summer with a lower temperature.   | Lower in winter with a higher temperature.  | Lower in summer with a higher temperature.  | Lower in winter with a lower temperature.   |
| 25. | Generally as altitude increases:   | temperature decreases and   | temperature, pressure and density decreases   | temperature and pressure increase and   | temperature decreases and                   |

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|     |   | density increases                         |   | density decreases                                       | pressure density increases                                       |
| 26. | Density at the surface will be low when:  | Pressure is high and temperature is high. | Pressure is high and temperature is low.                  | Pressure is low and temperature is low.                 | Pressure is low and temperature is high.                         |
| 27. | If in the southern hemisphere an aircraft in flight at 2000 ft is experiencing starboard drift, the aircraft is flying towards: | an area of high pressure                  | an area of low pressure                                   | a warm front  | a depression   |
| 28. | Subsidence in an anticyclone produces:  | saturated air and an inversion            | dry air and an inversion                                  | isothermal dry and stable air                           | increased pressure at the surface                                |
| 29. | With an anticyclone over the UK the expected weather is:  | Thunderstorms in summer, fog in winter.   | Stratus in summer with drizzle, CU and snow in winter.    | Clear skies or fair weather CU in summer, fog in winter | Clear skies in summer with haze, cold frontal weather in winter. |
| 30. | When flying towards a depression at a constant indicated altitude, the true altitude will be:                                   | Lower than indicated.                     | Higher than indicated.                                    | The same as indicated.                                  | Lower than indicated at first then the same as indicated later.  |
| 31. | The name given to the lowest forecast mean sea level pressure in an area is:  | QFE                                       | Regional QNH  | QFF   | QNE  |
| 32. | The Altimeter will always read  | With 1013 set the altitude above MSL      | With airfield QNH set the height above the airfield datum | The vertical distance above the pressure level set      | the correct flight level with regional QFE set.                  |
| 33. | The altimeter subscale is set to 1030 mbs and the altimeter reads 4500'. QNH is 996 mbs. What is the altitude of                | 3480'                                     | 3990'   | 5418'   | 3582'  |

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|     | the aircraft ? (Assume 1 mb = 27')  |   |   |   |  |
| 34. | An aircraft, flying at FL 100 at a constant RAS, flies from an area of warm air into an area of cold air. The QNH is unchanged. How has the aircraft altitude and TAS changed? Altitude TAS | decreased, increased  | Increased, increased  | decreased, decreased  | Increased, decreased   |
| 35. | QNH at Johannesburg is 1025 hPa, elevation is 1600m amsl. What is the QFE. (Assume 1 mb = 8m)   | 1000.8 hPa  | 830.6 hPa   | 1002 hPa  | 825 hPa  |
| 36. | The measurement of surface temperature is made:   | at ground level   | at approximately 10 metres from ground level                          | at approximately 4 feet above ground level                                  | at approximately 4 metres above ground level                                     |
| 37. | The purpose of a "Stevenson Screen" is to:  | maintain a moist atmosphere so that the wet bulb thermometer can function correctly | to prevent the mercury freezing in the low winter temperatures        | protect the thermometer from wind, weather and from direct sunshine         | keep the wet and dry bulb thermometers away from surface extremes of temperature |
| 38. | If temperature remains constant with an increase in altitude there is:  | an inversion  | an inversion aloft  | uniform lapse rate  | an isothermal layer  |
| 39. | The surface of the earth is heated by:  | convection  | conduction  | long wave solar radiation   | short wave solar radiation   |
| 40. | Cloud cover will reduce diurnal variation of temperature because:   | incoming solar radiation is reflected back to space and                             | incoming solar radiation is re-radiated back to space and atmospheric | the cloud stops the suns rays getting through to the earth and also reduces | incoming solar radiation is reflected back to space and outgoing terrestrial     |

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|     |  | outgoing terrestrial radiation is reflected back to earth | heating by convection will stop at the level of the cloud layer | outgoing conduction                                     | radiation is re-radiated from the cloud layer back to the surface      |
| 41. | Diurnal variation of the surface temperature will:   | be unaffected by a change of wind speed                   | decrease as wind speed increases                                | increase as wind speed increases                        | be at a minimum in calm conditions                                     |
| 42. | Which of the following surfaces is likely to produce a higher than average diurnal variation of temperature: | rock or concrete  | water   | snow  | vegetation   |
| 43. | Most accurate temperatures above ground level are obtained by:   | tephigram   | aircraft reports  | temperature probe                                       | radio sonde  |
| 44. | The method by which energy is transferred from one body to another by contact is called:                     | radiation   | convection  | conduction  | latent heat  |
| 45. | The diurnal variation of temperature is:   | greater over the sea than overland                        | less over desert areas then over temperate grassland            | reduced anywhere by the presence of cloud               | increased anywhere as wind speed increases                             |
| 46. | The troposphere is heated largely by:  | absorption of the sun's short wave radiation              | radiation of heat from cloud tops and the earth's surface       | absorption by ozone of the sun's short wave radiation   | conduction from the surface, convection and the release of latent heat |
| 47. | An inversion is one in which:  | there is no horizontal gradient of temperature            | there is no change of temperature with height                   | there is an increase of temperature as height increases | there is a decrease of temperature as height increases                 |

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| 48. | With a clear night sky, the temperature change with height by early morning is most likely to show: | A steady lapse rate averaging 2°C per 1000 ft.         | A stable lapse rate of 1 °C per 1000 ft.               | An inversion above the surface with an isothermal layer above.   | An inversion from near the surface and a 2°C per 1000 ft lapse rate above.   |
| 49. | Over continents and oceans, the relative temperature conditions are:                                | Warmer in winter over land, colder in summer over sea. | Colder in winter over land, warmer in winter over sea. | Cold in winter over land and sea.  | Warmer in summer over land and sea.  |
| 50. | Throughout the 24 hrs of a day the Relative Humidity can be expected to:                            | Increase during the day and decrease at night.         | Stay reasonably constant throughout the 24 hours.      | Reduce during the day and increase at night.   | Only change with a change of air mass.   |
| 51. | A change of state directly from a solid to a vapour or vice versa is:                               | insolation   | condensation   | evaporation  | sublimation  |
| 52. | The instrument used for measuring the humidity of air is a:   | hydrometer   | hygrometer   | wet bulb thermometer   | hygroscope   |
| 53. | The process of change of state from a gas to a liquid is:   | evaporation in which latent heat is absorbed           | evaporation in which latent heat is released           | condensation in which latent heat is absorbed  | condensation in which latent heat is released  |
| 54. | The process of change of state from a liquid to a gas is:   | condensation in which latent heat is released          | evaporation in which latent heat is released           | condensation in which latent heat is absorbed  | evaporation in which latent heat is absorbed   |
| 55. | Relative humidity is:   | air temperature over wet bulb temperature x 100        | air temperature over dew point temperature x 100       | the actual amount of water vapour in a sample of air over the maximum amount of water vapour that the sample can contain x 100 | the maximum amount of water vapour that a sample of air can contain over the actual amount of water vapour the sample does contain x 100 |

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| 56. | Absolute humidity is:   | the number of water droplets in a given quantity of air                | the amount of water vapour that a given quantity of air holds                      | the maximum amount of water vapour that a given quantity of air can hold                 | the maximum number of water droplets that a given quantity of air can hold         |
| 57. | Wet bulb temperature would normally be lower than the dry bulb temperature because: | condensation causes a release of latent heat                           | evaporation causes cooling   | latent heat is absorbed by the bulb thermometer  | of condensation on the muslin wick of the bulb                                     |
| 58. | Which one of the following statements relating to atmospheric humidity is correct:  | If the air temperature falls then the absolute humidity must increase. | The absolute humidity is the mass of water vapour contained in unit volume of air. | The diurnal variation of dewpoint temperature is greatest when skies are clear at night. | The dewpoint temperature is the temperature indicated by the wet bulb thermometer. |
| 59. | When water vapour changes to ice:   | Latent heat is absorbed.   | Specific heat is released.   | Latent heat is released.   | Specific heat is absorbed.   |
| 60. | If the ELR is 0.65°C/ 100m  | Atmosphere is conditionally stable                                     | Atmosphere is stable   | Atmosphere is unstable   | Atmosphere is stable when dry  |
| 61. | Why does air cool as it rises?  | It expands   | It contracts   | The air is colder at higher latitudes  | The air is colder at higher altitudes  |
| 62. | From which of the following can the stability of the atmosphere be determined?      | surface pressure   | surface temperature  | DALR   | ELR  |
| 63. | When the upper part of a layer of warm air is advected:                             | Stability increases within the layer                                   | Stability decreases within the layer   | Wind speed will always decrease with increase in height in the Northern Hemisphere       | Both A & B   |
| 64. | The temperature at the surface is 15°C, the temperature at 1000ft                   | Unstable   | Conditionally unstable   | Stable   | Cannot tell  |

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|     | is 13°C. Is the atmosphere  |  |  |   |  |
| 65. | A mass of unsaturated air is forced to rise till just under the condensation level. It then settles back to its original position | Temp. is greater than before   | Temp. stays the same   | Temp. is less than before   | It depends on QFE  |
| 66. | What happens to the stability of the atmosphere in an inversion? (Temp increasing with height)                                    | Absolutely stable  | Unstable   | Conditionally stable  | Conditionally unstable   |
| 67. | A layer of air can be   | Conditional; unstable when unsaturated and stable when saturated           | Conditional; unstable when saturated and stable when unsaturated                                 | Neutrally stable when saturated and unstable when unsaturated                                 | All of the above   |
| 68. | The DALR is   | Variable with time   | Fixed  | Variable with latitude  | Variable with temperature  |
| 69. | A parcel of air cooling by 1°C/100m is said to be?  | Conditionally stable   | Conditionally unstable   | Unstable  | Stable   |
| 70. | Maximum turbulence associated with the standing waves is likely to be:  | Two wavelengths down wind and just above the surface.                      | Approximately one wavelength down wind of, and approximately level with, the top of the ridge.   | Just below the tropopause above the ridge.  | Down the lee side of the ridge and along the surface.  |
| 71. | Which of the following statements referring to Jet Streams is correct:  | CAT associated with Jet Streams is probably associated with the rapid wind | The maximum windspeed in a Jet Stream increases with increase of height up to the tropopause and | The core of a Jet Stream is usually located just below the tropopause in the colder air mass. | The rate of change of windspeed at any given level is usually greatest on the warmer side of the |

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|     |   | shear in the vicinity of the jet.  | remains constant thereafter.  |  | jet.  |
| 72. | The significance of lenticular cloud is:  | There may be mountain waves present and there will be severe turbulence.     | There are mountain waves present but they may not give severe turbulence. | A Fohn wind can be expected with no turbulence.  | A Katabatic wind is present which may lead to fog in the valleys. |
| 73. | For standing waves to form, the wind direction must be near perpendicular to a ridge or range of mountains and the speed must:  | Decrease with height within a stable layer above the hill.                   | Increase with height within an unstable layer above the hill.             | Decrease with height within an unstable layer above the hill.  | Increase with height within a stable layer above the hill.        |
| 74. | Clear air turbulence, in association with a polar front jet stream in the Northern Hemisphere, is more severe:  | Underneath the jet core  | In the centre of the jet core   | Looking downstream on the right hand side  | Looking downstream on the left hand side                          |
| 75. | Mountain waves can occur:   | Up to a maximum of 5000 ft above the mountains and 50 nm to 100 nm downwind. | Up to mountain height only and 50 nm to 100 nm downwind.                  | Above the mountain and downwind up to a maximum height at the tropopause and 50 nm to 100 nm downwind. | In the stratosphere.  |
| 76. | CAT should be reported whenever it is experienced. What should be reported if crew and passengers feel a definite strain against their seat or shoulder straps, food service and walking is | Light CAT  | Extreme CAT   | Severe CAT   | Moderate CAT  |

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|     | difficult and loose objects become dislodged:  |   |   |   |  |
| 77. | A gust of wind often causes a veer in the surface wind (Northern Hemisphere) because:                    | It strengthens pressure gradient force.                             | It increases coriolis force.  | It increases centrifugal force.   | It lifts the air above the friction layer.   |
| 78. | When a Fohn wind occurs:   | There are unstable conditions on the downwind side of the mountain. | Air is cooled mainly at the DALR on the upwind side of the mountain and is heated at the SALR on the downwind side. | Windspeed must be at least 15 kt at the surface increasing with height and maintaining direction. | Air is cooled mainly at the SALR on the upwind side of the mountain and is heated mainly at the DALR on the downwind side. |
| 79. | The geostrophic wind blows:  | Parallel to curved isobars.   | When pressure values are changing rapidly.  | In a tropical revolving storm.  | When the coriolis force and pressure gradient force are equal.   |
| 80. | A strong wind that rises suddenly, last for some minutes and dies comparatively suddenly away is called: | a gust  | a squall  | a gale  | a blast  |
| 81. | The force which causes the air to flow parallel to the curved isobars is called:                         | pressure force  | centrifugal force   | coriolis force  | gradient force   |
| 82. | The deflection of the surface wind direction from the geostrophic is, on average:                        | over the land by night - 35 ° in cloudy conditions                  | over the land by day - 35' in cloudy conditions   | over the sea - 30°  | over the sea - 10°, veered in the southern hemisphere  |
| 83. | A ravine or valley wind:   | Is a wind blowing at increased speed along a valley.                | Is a wind blowing from a hill to a valley below.  | Is a wind blowing up a hill from a valley.  | Is a wind blowing at reduced speed along a valley.   |

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| 84. | How do you recognise high level jet streams and associated CAT?  | High pressure centre at high level   | Streaks of Cirrus  | High level dust                                     | Lenticularis                 |
| 85. | The Arctic Jet core is at:   | 20,000ft   | 30,000ft   | 40,000ft  | 50,000ft                     |
| 86. | When heading South in the Southern Hemisphere you experience Starboard drift:  | You are flying towards a lower temperature   | You are flying away from a lower temperature             | You are flying towards a low pressure               | You are flying out of a high |
| 87. | Contours on a weather chart indicate:  | Heights of pressure levels   | Distance between pressure levels                         | Thickness between pressure levels                   | Height of ground             |
| 88. | A jet stream with a wind speed of 350kts is  | Impossible   | Possible but very rare                                   | Possible in polar areas                             | Common                       |
| 89. | When flying from south to north in the Southern Hemisphere, you cross over the Polar Front Jet. What happens to the temperature? | it increases   | it decreases   | it remains the same                                 | impossible to determine      |
| 90. | The core of a jet stream is located  | at the level where temperature change with altitude becomes little or nil and the pressure surface is at maximum slope | in the warm air where the pressure surface is horizontal | in the warm air and directly beneath at the surface | in cold air                  |
| 91. | What is the ratio of height to width in a typical jet stream?  | 1:10   | 1:100  | 1:1000  | 1:10000                      |
| 92. | When and where does an Easterly jet stream   | All year through the Equator   | In summer from SE Asia through S. India                  | In summer from the Middle East through              | In winter in Arctic Russia   |

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|     | occur?  |   | to Central Africa                       | N. Africa and the Mediterranean to S. Spain    |   |
| 93. | From the pre-flight briefing you know a jet stream is at 31,000 ft whilst you are at FL 270 You experience moderate C.A.T. What would be the best course of action? | Stay level  | Descend                                 | Climb  | Reduce speed  |
| 94. | Wind at altitude is usually given as ..... in .....   | True, m/s   | Magnetic, m/s                           | True, Kts                                      | Magnetic, Kts   |
| 95. | Under which of the following circumstances is the most severe CAT likely to be experienced?   | A westerly jet stream at low altitude in the summer | A curved jet stream near a deep trough  | A straight jet stream near a low pressure area | A jet stream where there is a large spacing between the isotherms |
| 96. | The size of raindrops from a cloud is greater if:   | Air is stable and cloud is layer type.              | Air is unstable and cloud is heap type. | Cloud type is AC or NS.                        | The relative humidity is high.                                    |
| 97. | Which piece of equipment is used to measure cloud base:   | barograph   | hygrometer                              | alidade  | barometer   |
| 98. | In aerodrome reports and forecasts the height of the cloud base refers to:  | the height above mean sea level                     | the height above aerodrome elevation    | the pressure altitude of the cloud base        | the height above the average ground level for the area            |
| 99. | Cloud types are classified under three basic family headings, these are:  | Cirriiform, Stratiform, Cumuliform                  | Stratiform, Heap, Cirriiform            | Cirrus, Cumulus and layer                      | Cumulus, Layer and Heap   |

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| 100. | Lumpy or heaped white cloud is:  | altocirrus                                 | cumulus  | cumulonimbus  | nimbostratus  |
| 101. | Continuous type precipitation is expected from layer clouds because:                         | The vertical extent of the cloud is small. | The upcurrents are not very strong.                                      | The air is stable.  | The cloud is large in horizontal extent.                                  |
| 102. | The turbulence associated with cumulus cloud is:   | Moderate.                                  | Slight to nil.   | Nil.  | Moderate possibly severe.   |
| 103. | When the met observer reports the amount of cloud present at a station, it will be given as: | Clear, scattered, broken or overcast       | The amount of cloud, in tenths of the sky covered , using the term oktas | The amount of cloud, in quarters of the sky covered, using the term oktas | The amount of cloud, in eighths of the sky covered, using the term oktas. |
| 104. | Which of the following clouds is never a hazard to aviation:                                 | Nimbostratus                               | Noctilucent cloud  | Cumulonimbus cloud  | Stratus cloud   |
| 105. | If you observe drizzle falling, the cloud above you is most likely to be:                    | AS   | CU   | ST  | NS  |
| 106. | Clouds formed by convection will always:   | Be layer clouds.                           | Be CU CB or NS.  | Have a rising cloud base and may develop into CB as the day progresses.   | Form only in Polar maritime air.  |
| 107. | The type of cloud from which continuous moderate or heavy rain is likely to fall is:         | large cumulus                              | altostratus  | nimbostratus  | cumulonimbus  |
| 108. | The movement of cool moist air over a warmer surface is likely to cause:                     | cumulus or cumulonimbus cloud              | advection fog  | nimbostratus cloud  | alto cumulus lenticular cloud   |
| 109. | Intensity of precipitation is  | intermittent, continuous or                | drizzle, rain or snow  | slight, moderate or heavy   | intermittent, moderate or heavy   |

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|      | described as either:  | showery  |  |  |  |
| 110. | The term "precipitation" implies that:  | precipitation is in the form of rain and is continuous                           | precipitation is from cumulonimbus cloud and lasts for short periods                                       | precipitation is intermittent and is from strato form cloud  | precipitation is continuous for long periods from cumuloform cloud                               |
| 111. | The type of precipitation in which visibility is likely to be most reduced:                         | drizzle  | snow   | light rain   | sleet  |
| 112. | The type of precipitation usually associated with shallow stratocumulus is:                         | Mainly water droplets which can be supercooled if the temperature is low enough. | Ice crystals.  | Supercooled water droplets only.   | Large water droplets due to the strong up-currents associated with this type of cloud            |
| 113. | If there are small cumulus in the morning in summer, it is reasonable to forecast later in the day: | Clear skies.   | St and drizzle.  | CB Cloud.  | Haze.  |
| 114. | The conditions which must exist to allow thunderstorms to develop are:                              | a trigger action, a plentiful supply of moisture and a very stable atmosphere    | a steep lapse rate, a stable atmosphere through a large vertical extent and a plentiful supply of moisture | a plentiful supply of moisture and a steep lapse rate through a large vertical extent and a trigger action | a steep lapse rate through a large vertical extent, a low relative humidity and a trigger action |
| 115. | Hazards of the mature stage of a TS cell include lightning, turbulence and:                         | microburst, windshear and anvil  | icing, microburst and windshear  | icing, drizzle and microburst  | windshear, hail and fog  |
| 116. | On a significant weather chart the thunderstorm symbol signifies:                                   | moderate turbulence and moderate icing   | severe turbulence and severe icing   | moderate turbulence and severe icing   | moderate/severe turbulence and/or moderate/severe icing  |

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| 117. | Thunderstorms require a trigger action to release the conditional instability. Which of the following would be the least suitable as a trigger: | convergence in temperate latitudes   | convergence in tropical latitudes   | subsidence in tropical latitudes                 | convection in polar latitudes                |
| 118. | The following is unlikely to be a hazard below a thunderstorm:  | Severe turbulence.   | Severe icing.   | Windshear.                                       | Large variations in pressure setting values. |
| 119. | Thunderstorms are likely if:  | Air is unstable, there is sufficient water vapour and there is trigger action. | Air is completely stable, there is sufficient water vapour and there is lifting orographically. | There is a warm front.                           | There is a col in winter.                    |
| 120. | How long approximately does a Cumulonimbus cell take to complete the full cycle from the Cumulus (building) to dissipating stage:               | 2-3 hours  | 1-2 hours   | 4-5 hours  | About 1 hour                                 |
| 121. | A microburst usually lasts for.....and is about.....across.   | 20 minutes 20 nm   | 5 minutes 5 km  | 30 minutes 10 nm                                 | 45 minutes 5 nm                              |
| 122. | Thunderstorms caused by.....are most common in the summer and by.....in the.....  | lapse rate air masses late spring  | air masses frontal activity winter  | cold fronts air masses autumn                    | air masses frontal activity summer           |
| 123. | When flying through an active CB cloud, lightning strikes are most likely:  | Above 5000' and underneath the anvil.  | In the clear air below the cloud in rain.   | In the temperature band between +10°C and -10°C. | At or about 10 000 ft AMSL.                  |

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| 124. | Regarding thunderstorms, the most accurate statement amongst the following is:  | There will always be windshear under the cloud.   | The average movement is in accord with the wind at 10 000 ft.  | If the cloud base has a temperature below 0°C then freezing rain will occur.   | The number of lightning flashes is directly proportional to the degree of turbulence.                              |
| 125. | Advection fog is formed when..... air moves over a.....surface and is..... its dewpoint:.   | humid cold kept above   | Warm moist cooler cooled below   | dry frozen well below  | warm moist warmer kept above   |
| 126. | On a night when radiation fog is forming over most of southern England, the aerodromes likely to be first to experience the fog will be those situated: | Near the coast with a light onshore wind and clear skies.                                     | At the bottom of the hill with a light katabatic wind blowing .  | Near the coast with a land breeze and cloudy skies.  | At the top of a hill with clear skies and no wind.   |
| 127. | Radiation fog is most likely:   | With a wind speed up to 15 kt, a clear sky and a high relative humidity.                      | With a wind of 2-8 kt, a high density and the summer season.   | In an anticyclone in winter.   | On a hill in autumn.   |
| 128. | Changes of RVR are reported for increments of:  | 25 m up to 250 m  | 25 m up to 200 m   | 50 m between 300 m and 800 m   | 50 m between 500 m and 800 m   |
| 129. | Frontal fog is most likely to:  | form ahead of a vigorous fast moving cold front   | form ahead of a warm front   | form on a vigorous cold front and last for many hours  | form to the rear of a warm front but only last for 1 to 2 hours  |
| 130. | Fog may be defined as:  | a reduction of visibility to less than 1000 metres due to the presence of water vapour in the | a reduction of visibility to less than 1000 metres due to the presence of water droplets in suspension in the atmosphere | a reduction of visibility to less than 1500 metres due to the presence of water droplets in suspension in the atmosphere | a reduction of visibility to less than 1000 ft due to the presence of water vapour in suspension in the atmosphere |

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|      |  | atmosphere  |   |  |   |
| 131. | ..... forms when moist air ..... over a surface which is ..... than the dew point of the air. Fill in the missing 3 words from the list given below: | radiation fog passes warmer   | advection fog settles cooler  | advection fog passes cooler  | radiation fog settles warmer  |
| 132. | Advection fog:   | Only occurs at night and early morning.   | Is most likely with Polar Maritime air.   | Will only clear by insolation.   | Can sometimes last for 24 hours or more in winter.  |
| 133. | In circumstances where there is a clear sky, calm wind and a high relative humidity in Autumn:   | Radiation fog is likely over night.   | Advection fog will form.  | Radiation fog is likely at sunrise after previous mist.                  | Hill fog can be expected.   |
| 134. | At a station equipped with IRVR, reports are given:  | Every ' /2hour.   | When the normal visibility is 1500 m or less.   | When there is mist.  | When there is haze.   |
| 135. | At temperatures of between 0°C and -10°C clouds will consist of:   | entirely water droplets   | entirely ice crystals   | mostly water vapour  | mostly supercooled water droplets and a few ice crystals  |
| 136. | Turbulent clouds are most serious from the icing standpoint because:   | strong vertical currents mean that a predominance of large supercooled water droplets will be present | strong vertical currents mean that a predominance of small supercooled water droplets will be present | turbulent clouds produce hail which sticks to the aircraft               | turbulent clouds indicate a low freezing level  |
| 137. | Hoar frost forms on an aircraft when:  | the aircraft suddenly enters a cloud at below freezing temperature                                    | the aircraft in sub zero clear air suddenly enters a colder region                                    | the aircraft in sub zero clear air suddenly enters a warmer moist region | the aircraft suddenly enters a cloud which is at a higher temperature than the surrounding air. |

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| 138. | Stratus cloud of limited depth at a temperature of -5°C will most likely give:  | moderate to heavy rime ice  | moderate to heavy glaze ice   | light to moderate rime ice                                   | light to moderate glaze ice                 |
| 139. | Clear ice forms as a result of.   | large supercooled water droplets spreading as they freeze                           | ice pellets splattering on the aircraft   | small supercooled water droplets splashing over the aircraft | water vapour freezing to the aircraft       |
| 140. | Carburettor icing is unlikely:  | In cloud.   | At temperatures between -10°C and -30°C.  | In clear air.  | When the RH is 40%.                         |
| 141. | In AS cloud at FL 170 and a temperature of -20°C the airframe icing most likely to be experienced is:   | Moderate clear icing.   | Light rime icing.   | Hoar frost.  | Severe clear icing.                         |
| 142. | Kinetic heating will:   | Increase the risk of icing if it raises the airframe temperature to just below 0°C. | Increase the risk of icing if it raises the airframe temperature to just above 0°C. | Always increase the risk of airframe icing.                  | Always decrease the risk of airframe icing. |
| 143. | Frankfurt-Main EDDF :<br>The W/V at 211000 is expected to be:<br>Frankfurt Main: EDDF<br>SA201720 03015KT<br>8000NE FEW045<br>SCT250 14/10 Q1016<br>NOSIG SA201650<br>03011KT 6000NE<br>SCT042 BKN250 15/10<br>Q1015 NOSIG<br>FC201500Z 201601<br>04010KT CAVOK | 060/18G30KT   | 040/15KT  | 060/18KT   | 040/10KT                                    |

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|      | FT201600Z 210018<br>04015KT 3000HZ<br>BKN030 BECMG 0709<br>06018G30KT CAVOK   |                |               |               |                    |
| 144. | Zurich LSZH : The reduction in visibility at 210100 is likely to be caused by: Zurich: LSZH SA201720 04005KT 7000 SCT016 OVC022 12/08 Q1013 NOSIG SA201650 04008G19KT 7000 SCT016 SCT022 BKN040 12/08 Q1012 NOSIG FC201500Z 201601 05005KT 6000 SCT013 OVC028 BECMG 2124 2500BR OVCO10 FT201600Z 210018 05005KT 2500BR OVCO10 TEMPO 0008 1500 BR BECMG 0811 04010KT OVCO15 PROB30 TEMPO 1218 BKN020 | low stratus.   | fog.          | mist.         | showers.           |
| 145. | Milan/LIML : Minimum visibility forecast for 210500 is:Milan: LIMLSA 201720 OOOO0KT CAVOK 16/14 Q1007 NOSIG SA 201650 OOOO0KT CAVOK 16/15 Q1007 NOSIG FC 201700Z  | 5000m in mist. | 5 km in haze. | 9000m in fog. | 900m in fog banks. |

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|      | 201803 VRB05KT 8000<br>SCT025 TEMPO 3000 -<br>RAFT 201600Z 210018<br>VRB05KT 5000 SCT030<br>TEMPO 0206 0900<br>PRFG BKNO08 BECMG<br>1218 +RA BKN020   |                  |                      |             |             |
| 146. | Milan/LIML : The<br>lowest cloud base<br>expected at 201730<br>is:Milan: LIMLSA<br>201720 OOOO0KT<br>CAVOK 16/14 Q1007<br>NOSIG SA 201650<br>OOOO0KT CAVOK<br>16/15 Q1007 NOSIG FC<br>201700Z 201803<br>VRB05KT 8000 SCT025<br>TEMPO 3000 -RAFT<br>201600Z 210018<br>VRB05KT 5000 SCT030<br>TEMPO 0206 0900<br>PRFG BKNO08 BECMG<br>1218 +RA BKN020 | 5,000 feet       | unlimited (no cloud) | 2,500 feet. | 3,000 feet. |
| 147. | Milan/LIML : The<br>lowest visibility to be<br>expected at 202 100<br>is:Milan: LIMLSA<br>201720 OOOO0KT<br>CAVOK 16/14 Q1007<br>NOSIG SA 201650<br>OOOO0KT CAVOK<br>16/15 Q1007 NOSIG FC<br>201700Z 201803   | more than 10 km. | 3000 m.              | 5000 m.     | 900 m.      |

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|      | VRB05KT 8000 SCT025<br>TEMPO 3000 -RAFT<br>20160OZ 210018<br>VRB05KT 5000 SCT030<br>TEMPO 0206 0900<br>PRFG BKNO08 BECMG<br>1218 +RA BKN020   |   |  |   |  |
| 148. | Milan/LIML : What is the visibility forecast to be at LIML at 201730:Milan: LIMLSA 201720 OOOO0KT CAVOK 16/14 Q1007 NOSIG SA 201650 OOOO0KT CAVOK 16/15 Q1007 NOSIG FC 201700Z 201803 VRB05KT 8000 SCT025 TEMPO 3000 -RAFT 20160OZ 210018 VRB05KT 5000 SCT030 TEMPO 0206 0900 PRFG BKNO08 BECMG 1218 +RA BKN020 | 3000m.                                  | 8000m.                                 | 5000m.                                      | 10km or more.                          |
| 149. | An air mass that has travelled over an ocean is known as:   | continental air and has a high humidity | continental air and has a low humidity | maritime air and has a high humidity        | maritime air and has a low humidity    |
| 150. | If air in transit is heated from below it tends to become more:   | stable                                  | neutrally stable                       | unstable                                    | none of these                          |
| 151. | The weather associated with polar maritime air is:  | overcast, moderate drizzle              | overcast moderate intermittent rain    | broken cloud, light, moderate or heavy rain | broken cloud, moderate continuous rain |
| 152. | In the N. hemisphere  | The wind will tend                      | The wind will tend to                  | The windspeed will                          | The wind will tend to                  |

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|      | when flying in the troposphere above the surface friction layer in the polar maritime airmass behind the cold front of a fully developed frontal depression: | to veer in direction and increase in speed with progressive increase of altitude.   | veer in direction with increase of altitude but the speed may remain constant in the lower layers of the atmosphere. | reduce progressively with increase of altitude until at about 10 000 feet above mean sea level where it will then tend to increase in speed from another direction. | back in direction and increase in speed with progressive increase of altitude. |
| 153. | The airmasses involved in the development of a Polar Front Depression are:   | Polar Maritime and Polar Continental.   | Tropical Maritime and Polar Continental.   | Tropical Continental and Polar Maritime.  | Polar Maritime and Tropical Maritime.  |
| 154. | After passage of an occluded front in the Northern Hemisphere:<br>Wind .....<br>Temperature.....<br>Precipitation.....                                       | backs stops falling continues   | veers drops rapidly stops abruptly   | veers drops or rises begins to dry up   | backs rises quickly increases in strength                                      |
| 155. | With a cold occlusion:   | The air ahead of the warm front is colder than the air behind the cold front.   | The warm sector remains on the surface.  | The cloud type is predominately layer with a wide precipitation band.   | There is a risk of CB embedded in NS.  |
| 156. | A warm occlusion occurs when:  | warm air is forcing cool air over cold air  | cold air is forcing cool air over warm air   | cool air is forcing warm air over cold air  | cool air is forcing cold air aloft   |
| 157. | Tropical revolving storms usually:   | form close to one side of the equator and while moving slowly in a westerly direction, cross over to the other hemisphere | move in a westerly direction before recurving towards the equator  | move in an easterly direction before recurving towards the nearest pole   | do not form within 5 ° of the equator  |

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| 158. | With reference to tropical revolving storms, which of the following statements is correct: | typhoons are found in the South China sea in January  | cyclones, occur in the Bay of Bengal in winter  | hurricanes, in the South Atlantic sometimes affect the east coast of Brazil                    | hurricanes affect the south east of the USA in late summer |
| 159. | In comparison with a primary depression a secondary depression is:                         | Always more active.   | Sometimes more active.  | Never more active.   | Unlikely to produce gale force winds.                      |
| 160. | A Secondary Depression would form in association with:                                     | A Polar Depression.   | A Col.  | A Summer Thermal Depression over the Mediterranean or Caspian Sea.                             | A Polar Front Low.   |
| 161. | Tropical Revolving Storms:   | Are always given a male first name beginning with "A" for the first of the season and thereafter named in alphabetical order of occurrence. | Have internal wind speeds of 10-20 knots rotating cyclonically round a subsiding clear air core known as the eye. | Usually have the most severe weather in the quadrant to the right of the track in a Hurricane. | Regenerate after crossing the coast from sea to land       |
| 162. | A Secondary low pressure system rotates around a Primary low:                              | Cyclonically.   | Anticyclonically.   | Into the primary.  | At a constant distance.                                    |
| 163. | Flying conditions in a Secondary low pressure system are:                                  | Always more severe than in a Primary low.   | Sometimes more severe than in a Primary low.  | Less severe than in a Primary low.   | Relatively calm.   |
| 164. | Tropical Revolving Storms:   | Do not occur in the South Atlantic.   | Generally move from east to west before turning towards the equator.  | Intensify after crossing coasts.   | Occur principally in spring and early summer.              |
| 165. | Northern hemisphere  | warmer than the   | colder than the   | colder than the  | warmer than the  |

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|      | summers tend to be:   | southern hemisphere and winters are warmer too.   | southern hemisphere due to the smaller amount of solar radiation.  | southern hemisphere because of the large land masses.                            | southern hemisphere and the winters are colder.  |
| 166. | The effect of mountain barriers on temperature is exemplified by the following: | European temperatures are low in winter because there is no barrier to prevent cold Atlantic air crossing the area. | the Rocky mountains of North America prevent cold Pacific air reaching inland, so summer temperatures to the east of the mountains are high. | the Himalayas prevent warm dry air from Russia reaching India and Pakistan.      | the Ural mountains of West Russia prevent most of the cold Siberian air reaching Europe in summer. |
| 167. | Statistical pressure values tend to be:   | on average parallel to the lines of latitude.   | on average parallel to the lines of latitude in the southern hemisphere and much more variable in the northern hemisphere.                   | much lower in winter in the northern hemisphere than in the southern hemisphere. | higher over the oceans in winter.  |
| 168. | The average temperature around the equatorial regions:                          | is always above +40° C.   | is higher over the sea areas.  | varies on average from winter to summer by only some 5° C.                       | has a very high range of temperatures throughout the year.   |
| 169. | Trade winds:  | blow towards the sub tropical anticyclones.   | are caused by lifting over the heat equator and the subsequent air movements from the sub tropical anticyclones.                             | only blow in the winter months.  | blow from the equatorial low pressure systems throughout the year.                                 |
| 170. | Trade winds in the southern hemisphere are:                                     | southeasterly.  | southeast at first becoming southwest.   | in opposition to the monsoons.   | usually from the northeast.  |
| 171. | The large change in the direction of trade winds is caused by:                  | local pressure differences.   | an excess of air at height in association with the Hadley cells.   | the change in geostrophic force when crossing the                                | the cyclostrophic force in the equatorial regions.   |

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|      |  |  |  | geographic equator.  |   |
| 172. | Monsoons are seasonal winds which:                               | develop due to the high pressure over continents in winter and the subsequent low pressure which develops over the same areas in summer. | are never in combination with trade winds.   | blow only in the southeast Asia region.  | are from the southeasterly direction over the Indian sub continent in summer. |
| 173. | The outflow from the Siberian High:                              | is northwesterly over Japan, northerly and northeasterly over China and northerly over the whole of India.                               | is the source of Polar Maritime air.   | is northwesterly over Japan, northeasterly over southeast Asia and easterly over Europe. | is evident throughout the year.   |
| 174. | The upper winds tend to be westerly outside the tropics because: | the rotation of the earth is west to east.   | the thermal winds are westerly on average.   | surface winds are nearly always westerly.  | jet streams are usually westerly.   |
| 175. | Jet stream main locations are:                                   | in the warm air some 400 nm ahead of a warm or cold front and near the subtropical highs.  | in the warm air some 400 nm ahead of a warm front and some 200 nm behind a cold front and near the sub tropical highs. | only in association with the polar front.  | in association with the polar front and with mountain waves.                  |
| 176. | Jet streams:   | only occur in the troposphere.   | have a speed in excess of 80 kt.   | are located above the tropopause.  | are caused by a large difference in mean temperature in the horizontal.       |
| 177. | Near the equator upper winds tend to be:                         | easterly.  | westerly.  | at speeds greater than 60 kt.  | calm.   |
| 178. | The ITCZ is:   | the region between the two   | the boundary region between the two  | the boundary between polar air and   | a region of calm winds and layer type   |

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|      |   | trade wind systems centred on the heat equator.              | monsoons.   | equatorial air.                              | clouds with much haze.   |
| 179. | The areas of greatest rainfall are:   | those where there is much polar front depression activity.   | in the equatorial regions.  | in the polar regions.                        | in central North America in summer due to the large convective cloud formations. |
| 180. | Dust storms and haze are most common:   | in association with the sub tropical anticyclones over land. | with the Haboobs in winter.   | in unstable air with low pressure.           | in temperate latitudes.  |
| 181. | The most notorious advection fogs occur:  | over southwest UK.   | over the sea in the region of Newfoundland and the Kamchatka peninsula. | over Europe with high pressure to the north. | over central North America in autumn and winter.                                 |
| 182. | In the Northern Hemisphere a man observes a low pressure system passing him to the south, from west to east. What wind will he experience ? | Backs the Veers  | Constantly Backs  | Veers then Backs                             | Backs then steady  |
| 183. | When would a rotor cloud be ahead of a Cb ?   | Mature stage   | Cumulus stage   | Dissipating stage                            | Initial stage  |
| 184. | What are the conditions under which advection fog will be formed ?  | Warm moist air over cold surface                             | Cold dry air over warm surface  | Warm dry air over cold surface               | Cold moist air over warm surface   |
| 185. | What cloud does hail  | Cb   | Ns  | Cu   | Ci   |

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|      | fall from ?   |  |   |  |   |
| 186. | What is Relative Humidity dependent upon?                                     | Moisture content and temperature of the air        | Temperature of the air                            | Temperature and pressure                     | Moisture content of the air                     |
| 187. | Where are you most likely to find moderate to severe icing ?                  | In upper levels of Cumulonimbus Capillatus         | Nimbostratus                                      | Stratus                                      | Cirrus  |
| 188. | What are the indications of a thunderstorms from a great distance ?           | Thick Ci   | Thick Cb's  | Ns   | Sc  |
| 189. | A characteristic of a stable air mass   | Lapse rate of 10C / 100 m                          | Rising air slows down and dissipates              | Lapse rate of 0.3°C/100m                     | Good visibility and shower                      |
| 190. | Which conditions lead to mountain waves ?                                     | Unstable moist air, speeds <5 kts across the ridge | Stable air, speed, >20 kts across the ridge       | Unstable air, speed >20 kts across the ridge | Stable air, speed >30kts, parallel to the ridge |
| 191. | Where is the coldest air in a cold occlusion?                                 | Behind the cold front                              | At the junction of the occlusion                  | In front of the occlusion                    | Behind the warm front                           |
| 192. | What causes low level cloud in front of the warm front ?                      | Rain falling into the cold air                     | Rain falling into warm air                        | Warm air passing over cold surface           | Cold air passing over warm surface              |
| 193. | Where is the largest chance of squalls occurring ?                            | In front of an active cold front                   | Above the occlusion along the cold front          | Behind the cold front                        | Above the occlusion along the warm front        |
| 194. | In the areas of the ITCZ why are the heights of the tropopause not reported ? | Because it's too cold                              | Because it cannot be measured                     | Because it is likely to be above your FL     | Because it is in the stratosphere               |
| 195. | Description of radiation fog  | Marked increase in ground wind speed               | Marked increase in wind speed close to the ground | Ground cooling due to radiation              | Warm air over warm surface                      |
| 196. | What is the composition of Ci cloud   | Super cooled water droplets                        | Ice crystals                                      | Water droplets                               | Smoke particles                                 |

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|      | ?   |  |   |  |   |
| 197. | Isolated TS occur mostly due to   | Warm frontal uplift                          | Cold front uplift                             | Insulation   | Convection                                |
| 198. | What type of cloud is associated with drizzle ?   | St   | Cb  | Ci   | Ac  |
| 199. | Fair weather cumulus gives an indication of   | Poor visibility                              | Thunderstorms                                 | Turbulence   | Smooth flying below                       |
| 200. | What type of jet stream blows constantly through the northern hemisphere ?                                      | Arctic jet                                   | Equatorial jet                                | Polar night jet  | Sub tropical jet                          |
| 201. | Why is clear ice such a problem ?   | Translucent and forms along leading edges    | Not translucent and forms along leading edges | Very heavy and can affect aircraft controls and surfaces | Forms in clear air                        |
| 202. | A steep pressure gradient is characterized by   | Isobars close together, strengthened wind    | Isobars far apart, decreased wind             | Isobars close together, temperature increasing           | Isobars far apart, temperature decreasing |
| 203. | What type of icing requires immediate diversion ?   | Light  | Moderate                                      | Severe   | extreme                                   |
| 204. | At a stationary front   | Winds blow parallel to the isobars and front | Winds blow perpendicular to the isobars       | Winds are always very strong                             | Winds are usually gusty and variable      |
| 205. | Sublimation is :  | Solid to vapour                              | Vapour to liquid                              | Liquid to vapour   | Liquid to solid                           |
| 206. | Standing in the Northern Hemisphere, north of a polar frontal depression travelling west to east, the wind will | Continually veer                             | Continually back                              | Back then veer   | Veer then back                            |
| 207. | What is the coldest time of the day ?   | 1 hr before sunrise                          | 30 min before sunrise                         | at exact moment of sunrise                               | within 30 min of sunrise                  |

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| 208. | Which of the following would lead to the formation of Advection fog : | warm moist air over cold surface, clear night and light winds               | cold dry air over warm surface, clear night and light winds                                 | cold moist air over warm surface, cloud night with strong winds  | warm dry air over cold surface, cloudy night with moderate winds      |
| 209. | Which of the following would lead to the formation of Steaming fog :  | cold air over warm sea  | warm air over cold sea  | cold sea near coast  | warm air over land  |
| 210. | When is diurnal variation a maximum ?                                 | Clear sky, still wind   | Clear sky, strong wind  | OVC, still   | OVC, windy  |
| 211. | Dew point is defined as:  | The lowest temperature at which evaporation will occur for a given pressure | The lowest temperature to which air must be cooled in order to reduce the relative humidity | The temperature below which the change of state for a given volume of air will result in absorption of latent heat | The temperature to which moist air must be cooled to reach saturation |
| 212. | How do you define convection ?  | Horizontal movement of air  | Vertical movement of air  | Same as advection  | Same as conduction  |
| 213. | When is the latest time radiation fog is most likely ?                | Just after dawn   | Late afternoon  | Midday   | Midnight  |
| 214. | What is the tropopause ?  | The layer between the troposphere and mesosphere                            | The boundary between the troposphere and stratosphere                                       | Where temperature increases with height  | Upper boundary to C.A.T.  |
| 215. | Where do you find the majority of the air within atmosphere ?         | Troposphere   | Stratosphere  | Tropopause   | Mesosphere  |
| 216. | What are Lenticularis clouds a possible indication of ?               | Mountain waves  | Instability   | Developing Cu and Cb   | Horizontal wind shear in the upper atmosphere                         |
| 217. | What is the usual procedure when                                      | Request climb to get out of it  | Turn around immediately   | Descend immediately to clear it  | Accelerate through it and stay level                                  |

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|      | encountering CAT en-route ?   |  |  |  |   |
| 218. | When are cyclones most likely ?   | Mid Winter                                   | Late Autumn                                  | Late Summer  | Late Spring   |
| 219. | In what cloud is icing and turbulence most severe ?                                   | Cb   | Ns   | Sc   | Ci  |
| 220. | What will snow most likely fall from ?  | Ns   | Ci   | Cs   | Ac  |
| 221. | Rime ice is caused by:  | Large Super cooled water droplets            | Small Super cooled water droplets            | Slow freezing of water droplets onto the wing                          | Rapid re-freezing of large water droplets                                 |
| 222. | What is the most severe form of icing ?   | Dry Ice                                      | Hoar frost                                   | Clear ice  | Rime ice  |
| 223. | Cold occlusion is:  | Cold air undercutting warm air               | Warm air overriding cold air                 | Air ahead of the warm front undercutting the air behind the cold front | Air behind the cold front undercutting the air in front of the warm front |
| 224. | Warm occlusion is:  | Warm air undercutting cold air               | Warm air overriding cold air                 | Air ahead of the warm front over riding the air behind the cold front  | Air behind the cold front over riding the air in front of the warm front  |
| 225. | Duration of a microburst:   | 5 mins, 5 km                                 | 20 mins, 5 km                                | 15 mins, 25 km   | 45 mins, 25 km  |
| 226. | What causes the Geostrophic wind to be stronger than the gradient wind around a low ? | Centrifugal force adds to the gradient force | Centrifugal force opposes the gradient force | Coriolis force adds to the gradient force                              | Coriolis force opposes the centrifugal force                              |
| 227. | The subtropical high pressure belt is at which latitude ?                             | 25° - 35°                                    | 10° - 15o                                    | 55° - 75°  | 40° - 55o   |
| 228. | A pilot experiences   | SPECI  | METAR  | TEMPO  | SIGMET  |

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|      | severe turbulence and icing. A competent met. man would issue:          |   |  |   |  |
| 229. | ITCZ weather is:  | Thundery strong convergence                         | Clear Wx                                 | Showers   | Light winds  |
| 230. | Where is the ITCZ during the year ?                                     | Doesn't move  | Always north of the equator              | Always south of the equator                             | Moves in accordance with the heat equator            |
| 231. | Satellite images are used to:   | locate fronts in areas with few ground stations     | to achieve 14 day forecasts              | locate precipitation zones                              | locate wind currents on the ground                   |
| 232. | The degree of CAT experienced by an aircraft is proportional to:        | Intensity of vertical and horizontal wind shear     | Intensity of solar radiation             | Stability of the air                                    | Height of the aircraft                               |
| 233. | Microbursts:  | Only affect tropical areas                          | Average lifespan 30mins                  | Typical horizontal dimensions 1 - 3km                   | Always associated with CB clouds                     |
| 234. | Which of the following are described as precipitation ?                 | TS  | SQ                                       | SA  | DZ   |
| 235. | Clouds classified as low level are considered to have a base height of: | 500 - 1000ft  | 1000 - 2000ft                            | the surface - 6500ft                                    | 100 - 200ft  |
| 236. | Equatorial easterly jets  | Northern Hemisphere in summer                       | Northern Hemisphere all year             | Southern Hemisphere all year                            | Southern Hemisphere                                  |
| 237. | Landing at an airfield with QNH set the pressure altimeter reads:       | Zero feet on landing only if ISA conditions prevail | Zero                                     | The elevation of the airfield if ISA conditions prevail | The elevation of the airfield                        |
| 238. | Where are the fastest winds in a Tropical Revolving Storm ?             | Near the eye  | In the wall of cloud surrounding the eye | To the right of the track                               | To the right of the track in Hurricanes and Cyclones |

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| 239. | What type of cloud is usually found at high level ?  | St                                | Ac   | Cc                                   | Ns   |
| 240. | The QNH is 1030Hpa and at the Transition Level you set the SPS. What happens to your indicated altitude?   | Drops by 510ft                    | Rises by 510ft                                       | Rises                                | Drops  |
| 241. | Altostratus is   | A low level cloud                 | A medium level cloud                                 | A high level cloud                   | A heap type cloud  |
| 242. | Which of the following would give you the worst airframe icing ?   | GR                                | SN   | FZFG                                 | Modearte Freezing Rain                                       |
| 243. | Small super cooled water droplets hit the aerofoil, will it  | Freeze on impact giving clear ice | Partially freezing and running back giving clear ice | Freeze on impact giving rime ice     | Partially freezing and running back giving a cloudy rime ice |
| 244. | What causes wind ?   | Difference in pressure            | Rotation of the earth                                | Frontal systems                      | Difference in temperature                                    |
| 245. | Where are icing conditions on a runway specified ?   | TAF                               | METAR  | SIGMET                               | GAFFO  |
| 246. | Where are icing conditions on route specified ?  | TAF and METAR                     | METAR and SIGMET                                     | SWC (sig. weather. chart) and SIGMET | SPECI and TREND  |
| 247. | ICAO statement no diversion necessary, de-icing is not required or is effective; the icing in this case is | Light                             | Moderate   | Severe                               | Extreme  |
| 248. | What is subsidence ?   | Horizontal motion of air          | Vertical down draught of air                         | Vertical up draught of air           | Adiabatic cooling  |
| 249. | Moderate turbulence can be expected in   | Alto-cumulus Lenticularis         | Cirrocumulus   | Nimbostratus                         | Stratus  |
| 250. | RVR is   | Measured using                    | Displayed in TAF=s                                   | Usually greater than                 | Given when the met   |

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|      |   | ceilometers along the runway   | and METAR=s   | met visibility   | visibility is below 2000m   |
| 251. | Relative humidity increases in                | Warmer air compared to colder air  | Warm air at a constant vapour pressure                                      | Cold air at a constant vapour pressure                         | Colder air compared to warmer air                                     |
| 252. | Super cooled water droplets are found in      | Clouds only  | Clouds, fog and precipitation   | Precipitation and clouds                                       | Precipitation   |
| 253. | What would be reflected to radar ?            | Fog  | Hail  | Cloud  | Mist  |
| 254. | Turbulence is worst in a Jet stream           | In the core  | Along the axis of the core to the right                                     | Along the axis of the core to the left                         | Between the boundaries of the cold and warm air                       |
| 255. | Low level wind shear is likely to be greatest | At the condensation level when there is a strong surface friction        | At the condensation level when there is no night radiation                  | At the top of the friction layer during strong solar radiation | At the top of a surface based inversion during strong night radiation |
| 256. | TEMPO TS indicates                            | TS that will last for the entire period indicated                        | TS that will last for a max of 1 hr in each instance                        | TS that will last for at least 30 mins                         | TS that will last for less than 30 mins                               |
| 257. | What is a microburst?                         | Air descending at high speed, the air is colder than the surrounding air | Air is descending at high speed; the air is warmer than the surrounding air | A small Tropical Revolving Storm                               | A small depression with high wind speeds                              |
| 258. | Clear ice is most likely to form              | -10°C to -17°C   | -30°C to -40°C  | -20°C to -30°C   | -40°C to -60°C  |
| 259. | Where do you get freezing rain ?              | Rain hitting the ground and freezing on impact                           | Rain falling into warmer air  | Rain falling from an inversion into an area below 0°C          | Rain falling into colder air and freezing into pellets                |
| 260. | Which of the following is worst for icing ?   | -2°C to -15°C  | -15°C to -20°C  | -25°C to -30°C   | Near freezing level   |
| 261. | Which of the following will give the greatest | Dry air  | Moist air   | Cold air   | Warm air  |

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|      | difference between temperature and dew point ?                                    |   |                                    |  |  |
| 262. | CB cloud in summer contains   | Water droplets  | Ice crystals                       | Water droplets, ice crystals and super cooled water droplets | Water droplets and ice crystals                                |
| 263. | In an METAR the cloud height is above   | MSL   | Aerodrome level                    | The measuring station  | The highest point within SKm                                   |
| 264. | What is the technical term for an increase in temperature with altitude ?         | Inversion   | Advection                          | Adiabatic  | Subsidence   |
| 265. | What units are used to measure vertical wind shear ?                              | m/sec   | kts                                | kts/100ft  | kms/100ft  |
| 266. | How is QFE determined from QNH ?  | Using the temperature of the airfield and the elevation of the airfield | Using the temperature              | Using the elevation  | Using the temperature at MSL and the elevation of the airfield |
| 267. | Which cloud would produce showers ?   | NS  | AS                                 | CS   | CB   |
| 268. | What clears radiation fog ?   | Temperature drop  | Wind speed decreases               | Wind speed increases   | Mixing   |
| 269. | On a surface weather chart, isobars are lines of                                  | QNH   | QFE                                | QFF  | QNE  |
| 270. | A cold pool over land in summer would give rise to:                               | Clear skies   | Low stratus with intermittent rain | A potentially very unstable atmosphere                       | Extensive industrial haze                                      |
| 271. | Near industrial areas with lots of smoke what the worst situation is for met vis: | Low level inversion   | Strong winds                       | Fast moving cold fronts                                      | Cb's in the area   |

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| 272. | Upper level winds are forecast in significant weather charts as:                           | True/knots   | Magnetic/knots  | Magnetic/km/h   | True/km/h <sup>2</sup>  |
| 273. | METAR winds are meaned over the..... period immediately preceding the time of observation. | 10 minute  | 30 minute   | 1 hour  | 1 minute  |
| 274. | Main TAF's at large aerodromes are valid for approximately:                                | 1 hour   | 2 hours   | 6 hours   | 24 hours  |
| 275. | The most severe in-flight icing occurs in:   | Cb   | Cu  | Ns  | FZRA  |
| 276. | RVR is defined as being  | The maximum distance an observer on the runway can see marker boards by day and runway lights by night | The maximum distance a pilot in the threshold area at 15ft above the runway can see marker boards by day or runway lights by night, when looking in the direction of take-off or landing. | The maximum distance in metres a pilot 15ft above the touchdown zone can see marker boards by day and runway lights by night in the direction of take-off | The distance it would be possible to see an observer 15ft above the runway when standing in the direction of take-off or landing. |
| 277. | What type of cloud extends into another level ?  | As   | Ace   | Ns  | Ci  |
| 278. | Ceilometers measure  | RVR  | Cloud height  | Met Vis   | Turbulence  |
| 279. | In a METAR, the pressure group represents  | QFE rounded up to the nearest hectopascal  | QFE rounded down to the nearest hectopascal   | QNH rounded up to the nearest hectopascal   | QNH rounded down to the nearest hectopascal   |
| 280. | On a Station circle decode, the cloud  | 8 parts  | 6 parts   | 4 parts   | 10 parts  |

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|      | cover is divided into  |  |  |   |  |
| 281. | Which of the following is true ? QNH is:   | Always more than 1013.25 hPa   | Always less than 1013.25 hPa                         | Never 1013.25 hPa                               | Can never be above or below 1013 hPa                       |
| 282. | Radiation fog extends from the surface to:   | 5000ft   | 2000ft   | 10,000ft  | 800ft  |
| 283. | Low level inversions   | Good vis at night  | Good vis in the morning                              | Poor vis due to the lack of vertical moving air | Poor vis because of the lack of horizontal movement of air |
| 284. | A forecast trend   | Aerodrome and valid for 9 hours  | Route and valid for 24 hours                         | SPECI and valid for 2 hours                     | Landing and valid for 2 hour                               |
| 285. | On rare occasions TS can be found along the warm front. What conditions could lead to this ? | The warm sector being stable   | The warm sector being unstable                       | The cold air being stable                       | The cold air being unstable                                |
| 286. | Where are down draughts predominant in a thunderstorm ?                                      | Mature   | Dissipating  | Initial   | Cumulus  |
| 287. | What is FG V V 100 ?   | RVR less than 100m   | RVR less than 100ft                                  | Vertical visibility is 100m                     | Vertical visibility is 100ft                               |
| 288. | Where would an anemometer be placed ?  | close to station, 2m above ground  | on the roof of the station                           | 10 m above aerodrome elevation on a mast        | next to the runway, 1 m above ground                       |
| 289. | The ITCZ is best described as:   | The area where trade winds from the Northern Hemisphere meets those from the Southern Hemisphere | Where west winds meet subtropical high pressure zone | Where Harmattan meets the N.E. Trade winds      | Where cold fronts form in the tropics                      |
| 290. | What is the average vertical extent of radiation fog ?                                       | 2,000 ft   | 500 ft   | 5,000 ft  | 10,000 ft  |

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| 291. | Where is clear ice most likely in a Cb ?  | Near the freezing level   | -2°C to -15°C                                      | -20°C to -40°C   | Below -40°C                                    |
| 292. | Radiation fog extends to:   | 8,000 ft  | 4,000 ft   | 2,000 ft   | 500 ft   |
| 293. | In association with CB in temperate latitudes, at about what levels can hail be anticipated ? | Ground to FL 100  | Ground to FL200                                    | Cloud base to FL200  | Ground to FL450                                |
| 294. | Moderate Turbulence   | Changes in altitude and/or attitude occur but the aircraft remains in positive control at all times | Slight erratic changes in altitude and/or attitude | Large, abrupt changes in altitude and/or attitude. Aircraft maybe momentarily out of control | Slight, rapid and somewhat rhythmic bumpiness. |
| 295. | ATIS reports:   | Aerodrome operational and meteorological information  | Met only   | Operational only   | None of the above                              |
| 296. | +TSRA come from what sort of cloud ?  | Cb  | Ns   | Cc   | Cu   |
| 297. | As an active cold front passes, the altimeter of an a/c parked on the apron                   | Increases then decreases  | Fluctuates by 50 ft                                | Decreases then increases   | Remains unchanged                              |
| 298. | Where does a thunderstorms gain its energy from ?   | Energy gained directly from the sun   | Latent heat from water in oceans                   | The very fast winds  | The very low pressures inside the storm        |
| 299. | What is the height and temperature of Tropopause ?  | 8km and -40°C at Equator  | 16km and -75°C at Equator                          | 16km and -40°C at Pole   | 8 km and -75°C at Pole                         |
| 300. | What is the Easterly wave ?   | a wave of weather traveling east-west   | a wave of weather traveling west-east              | a wave of weather traveling north-south  | a wave of weather traveling south-north        |

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| 301. | Where is icing worst ?   | Near condensation level                   | Near freezing level                                      | -2°C to -15 °C  | -16°C to -30°C   |
| 302. | What is the base of alto cumulus in summer ?   | 0-1500Ft                                  | 1500-7000 Ft   | 7000-15000 Ft   | 7000-16500 Ft  |
| 303. | What happens to an aircraft altimeter on the ground once a cold front has passed ?   | increases                                 | decreases  | increases then decreases                              | remains the same   |
| 304. | What happens to an aircrafts altimeter on the ground at the approach of a cold front?  | increases then decreases                  | decreases then increases                                 | remains the same                                      | increases  |
| 305. | Which of these statements about icing is correct ?   | Ice will occur going through cirrus cloud | Large amounts of icing if temperature is way below -12°C | Icing increases if dry snow starts to fall from cloud | Icing will occur if super-cooled water and ice are present |
| 306. | Trade winds are most prominent or strongest  | Upper troposphere over sea                | Lower troposphere over ocean                             | Lower troposphere over land                           | Upper troposphere over land                                |
| 307. | On a significant weather chart you notice a surface weather front with an arrow labelled with the no. 5 pointing outward perpendicular from the front. This would indicate | Front speed is 5kts                       | Front movement is 5nm                                    | Front thickness is 5km                                | front is 5000ft AMSL                                       |
| 308. | With all other things being equal with a high and a low having constantly spaced circular isobars. Where is the wind the fastest.  | Anticyclonic                              | Cyclonic   | Where the isobars are closest together                | Wherever the PGF is greatest.                              |

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| 309. | Foehn winds are   | Warm katabatic                                     | Cold katabatic                                     | Warm descending winds                             | Warm anabatic   |
| 310. | The Gust Front is   | Characterised by frequent lightning                | Formed by the cold outflow from beneath TS         | another name for a cold front                     | Directly below a TS   |
| 311. | Cu is an indication of  | vertical movement of air                           | stability  | the approach of a warm front                      | the approach of a cold front                                  |
| 312. | Which clouds are evidence of stable air ?                                 | St, As   | Cb, Cc   | Cu, Ns  | Cu, Cb  |
| 313. | What is the most common freezing precipitation ?                          | Freezing pellets                                   | Freezing rain and freezing drizzle                 | Freezing graupel                                  | Freezing hail and freezing snow                               |
| 314. | Which of the following is an example of a Foehn wind ?                    | Bora   | Harmattan  | Chinook   | Ghibli  |
| 315. | Where do you find information on ICING and CAT ?                          | 300mb chart  | 700mb chart  | Sig. WX chart                                     | Analysis chart  |
| 316. | When is pressure altitude equal to true altitude ?                        | In standard conditions                             | When surface pressure is 1013.25mb                 | When the temperature is standard                  | When the indicated altitude is equal to the pressure altitude |
| 317. | Where would a pilot find information about the presence of a jet stream ? | On an Upper Air chart                              | On a Significant Weather chart                     | On a Surface Analysis chart                       | On a Wind/Temperature chart                                   |
| 318. | Thunderstorms will occur on a warm front:                                 | When air is cold moist and cools quicker than SALR | When air is warm moist and cools quicker than SALR | When air is cold moist and cools slower than SALR | When air is warm moist and cools slower than DALR             |
| 319. | Which frontal or occlusion system is the fastest moving ?                 | Warm front   | Cold front   | Cold occlusion                                    | Warm occlusion  |
| 320. | On a significant weather chart you  | The height of the significant weather              | Tropopause "low"                                   | Tropopause "high"                                 | Tropopause "middle"   |

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|      | notice a symbol with the letter "H" and the number "400" inside. What does this imply ?               | chart  |  |  |   |
| 321. | What is true about the dew point temperature ?  | Can be higher or lower than the air mass temperature | Can be higher than the temperature of the air mass only  | Can be only lower than the temperature of the air mass | Can be equal to or lower than the temperature of the air mass |
| 322. | What weather might you expect behind a fast moving cold front ?                                       | 8 oktas of layered cloud                             | Scattered ST   | Isolated CB's and showers                              | Continuous rain   |
| 323. | How would an unstable atmosphere likely reduce the visibility ?                                       | By mist  | By haze  | By rain and or snow                                    | Low stratus   |
| 324. | What is a SPECI ?   | A forecast valid for 3 hours                         | A report produced when significant changes have occurred | A forecast and valid for 6 hours                       | A landing forecast  |
| 325. | Where are easterly and westerly jets found ?  | Northern hemisphere only                             | Southern hemisphere only                                 | Northern and southern hemisphere                       | There are no easterly jets.                                   |
| 326. | Thermal lows usually develop  | Over the sea in summer.                              | Over the sea in winter.                                  | Over the land in summer.                               | Over the land in winter.                                      |
| 327. | TAF's are usually valid for   | For the period indicated in the TAF itself           | For 18 hours   | For 24 hours.  | For 8 hours.  |
| 328. | The surface wind circulation found between the sub tropical highs and the equatorial lows are called? | The doldrums   | The trade winds  | The easterlies   | The westerlies  |
| 329. | An occlusion is mimicking a cold front, where would the   | Behind the original cold front.                      | Behind the original warm front                           | In front of the occlusion.                             | In front of the original warm front.                          |

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|      | coldest air be found ?                                  |   |  |   |   |
| 330. | In a high pressure systems                              | The winds tend to be stronger in the morning. | The angle between the isobars and the wind direction is greatest in the afternoon. | The winds tend to be stronger at night.                         | The winds tend to be stronger in early afternoon. |
| 331. | Over flat dry land what would cause cloud ?             | Orographic uplift.                            | Convective uplift during the day.  | Release of latent heat.   | Advection.  |
| 332. | When would the strongest convection occur ?             | Land in summer                                | Land in winter   | Sea in summer   | Sea in winter                                     |
| 333. | Which way does a depression move ?                      | Direction of the isobars in the warm sector   | 90 degrees to the plane of the warm front  | Towards the east  | Direction of the isobars behind the cold front    |
| 334. | Freezing rain is most likely from                       | Warm front in summer                          | Cold front in summer   | Warm front in winter  | cold front in winter                              |
| 335. | What is the validity of a significant weather chart     | 3 hrs   | 6 hrs  | 9 hrs   | 12 hrs  |
| 336. | What is haze ?  | poor visibility due to drizzle                | poor visibility due to rain  | poor visibility due to dust or sand                             | all of the above                                  |
| 337. | What do the letters NO SIG mean at the end of a METAR ? | No significant change                         | No significant weather   | No significant cloud  | No signature on report                            |
| 338. | What is a trend forecast                                | An aerodrome forecast valid for 9 hours       | A routine report   | A landing forecast appended to a METAR/SPECI valid for 2 hours. | A route forecast, valid for 24 hours.             |
| 339. | How does clear ice form ?                               | SWD's speading on impact                      | Ice pellets shattering on impact   | Frost on the wing   | Water vapour freezing on the aircraft surface.    |
| 340. | Where is windshear the greatest?                        | Near a strong low level inversion and         | ear a valley with wind speeds greater than   | On the windward side of a mountain                              | When the wind is greater than 35kts               |

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|      |   | in the region of a thunderstorm                | 35kts   |  |  |
| 341. | Where do you find squall lines  | Where there are thunderstorms                  | Ahead of a fast moving cold front                             | Foggy areas  | Regions of snow                              |
| 342. | A Fohn wind occurs  | On the windward side caused by surface heating | On the leeward side, because the condensation level is higher | On the windward side, caused by surface cooling and wind flow reversal | On the leeward side, caused by precipitation |
| 343. | What is true about moderate to severe airframe icing  | It will occur in clear sky conditions          | Always occurs in AS cloud                                     | May occur in the uppermost levels of CB capillatus formation           | Most likely in NS                            |
| 344. | An aircraft flies into an area of supercooled rain with a temperature below zero, what kind of icing is most likely | Clear  | Rime  | Hoar frost   | Granular frost                               |
| 345. | What causes convection in a low pressure system   | Height   | Latitude  | Centripetal Force  | Friction                                     |
| 346. | Which of these statements is true about Hurricanes?   | They are 400-500m wide.                        | They pick up in force when they hit land .                    | The air inside is warmer than outside and can reach up to tropopause.  | They are never found more than 25° latitude. |
| 347. | Where is the ITCZ in July ?   | 25 N over the Atlantic                         | 10 - 20 N over East Africa and the Arabian sea                | 10 - 30 N over West Africa   | 20 - 30 N over East Africa                   |
| 348. | Above a stable layer in the lower troposphere in an old high pressure system is called:                             | radiation inversion                            | subsidence inversion  | frontal inversion  | terrestrial inversion                        |
| 349. | The figures "9999" in a meteorological forecast   | 8 km   | 10 km or more   | 5 km   | 12 km  |

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|      | or report means -  |  |  |  |   |
| 350. | Where is the ozone layer ?   | ionosphere   | Stratosphere   | Tropopause   | Troposphere                                   |
| 351. | The core of a jet stream located –   | a)At the level where temperature change with altitude becomes little or nil and the pressure surface is at a maximum slope . | In the warm air where the pressure surface is horizontal . | In the warm and directly beneath at the surface .    | In cold air .                                 |
| 352. | What happens to an aircrafts altimeters on the ground ones a cold front has passed ? | Increases  | Decreases  | Increases then decreases                             | Remain the same                               |
| 353. | Relative humidity increases in   | Warmer air compared to colder air  | Warm air at a constant vapour pressure                     | Cold air at a constant vapour pressure               | Colder air compared to warmer air             |
| 354. | In which part of the world are Tropical Revolving Storms most frequent ?             | Caribbean  | Madagascar, eastern Indian ocean .                         | North West Pacific – Japan , Korea, Southeast Asia . | Northern Indian Ocean around India, Srilanka. |
| 355. | An early morning fog over the sea lasts all day. As the land heats up, the sea fog - | May drift over the land  | will always disperse                                       | will always remain over the sea                      | will always remain over the land.             |
| 356. | Satellite Data Distribution System (SADIS) is a system for distribution of :-        | Radar imageries  | Meteorological data distribution system                    | Telecommunication system                             | Rainfall measurement system                   |
| 357. | Bangladesh Meteorological  | 3 Radar  | 4 Radar  | 5 Radar  | 2 Radar station                               |

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|      | Department has :  |                          |                         |                                      |                            |
| 358. | Radar is used for :-  | Wind direction and speed | Sea surface temperature | Detection cyclone and cloud movement | Detection of soil moisture |
| 359. | 5, 6 and 7 octas cloud is express as :  | OVC                      | BKN                     | SCT                                  | FEW                        |
| 360. | Synoptic surface observation are generally taken every :                          | 2 hours interval         | 3 hours interval        | 4 hours interval                     | 6 hours interval           |
| 361. | For a short range weather forecast which observation is more effective :          | Satellite observation    | Radar observation       | Radio sonde observation              | Ship observation           |
| 362. | Which seasons is called transition period :-                                      | NE monsoon               | SW monsoon              | Pre-monsoon                          | Retreating monsoon         |
| 363. | Maximum frequency of Nor'wester in Dhaka during the month of :-                   | March                    | April                   | May                                  | June                       |
| 364. | Which type of Nor'wester reaches upto Meghna estuary through Rajshahi Division :- | Type-A                   | Type-B                  | Type-C                               | Type-D                     |
| 365. | In the month of June tropical revolving storm in the Arabian sea may affect :-    | Delhi                    | Dhaka                   | Karachi                              | Kolkata                    |
| 366. | After passing western disturbance the weather phenomena occurs :-                 | Tropical cyclone         | Morning fog             | Tornado                              | Heat wave                  |
| 367. | Most of the active western disturbance that comes towards                         | Primary                  | Secondary               | Tertiary                             | None of the above          |

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|      | Bangladesh are :-  |                        |                         |   |                           |
| 368. | Western disturbance do not precisely travel west to east but their normal track is slightly :- | N/NE-ward              | South-SE ward           | E/NE-wards  | North to South ward       |
| 369. | On set date of SW monsoon in Bangladesh is :-  | 1st week of July       | 1st week of June        | 1st week of October                                       | 1st week of May           |
| 370. | The winter rainfall in India-Pakistan and Bangladesh is mostly due to :-                       | South-west monsoon     | Nor'wester              | North-East monsoon  | Western disturbance       |
| 371. | Pre-monsoon season in Bangladesh is :-   | June to September      | March to May            | December to February                                      | October to November       |
| 372. | A mamatus sky often gives warning for the formation of :-                                      | a)Cyclone              | Tornado                 | Monsoon   | Western disturbance       |
| 373. | Tornado often travels in a :-  | Straight way           | Horizontal way          | Erratic and skipping way                                  | North to south way        |
| 374. | Before issuing forecast a Meteorological officer follows :-                                    | Only TAF               | TAF and METAR           | All charts, Satellite data, significant weather chart etc | None of the above         |
| 375. | Bangladesh is Charecterize by High Pressure during:  | Pre-monsoon season     | NE monsoon season       | SW monsoon season   | Retreating monsoon season |
| 376. | When would a SIGMET be issued be for subsonic flights.   | Thunderstorms and fog. | Severe mountain waves . | Solar Flare activity.                                     | Moderate turbulence .     |
| 377. | The average eye of a tropical cyclone is :   | 30-40 miles            | 15-20 miles             | 10-15 miles   | 40-50 miles               |
| 378. | Which of the following constituents in the   | Nitrogen               | Oxygen                  | Water vapor   | Hydrogen.                 |

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|      | atmosphere has the greatest effect on weather :-   |  |   |   |                                      |
| 379. | Ascent of balloon at night by observing :  | A torch light                                  | A lantern attached to the balloon         | A charger light   | A electric bulb                      |
| 380. | Which is likely to cause aquaplaning ?   | +RA  | SA  | FG  | DS                                   |
| 381. | With the approach of a warm front ?  | QNH/QFE decreases                              | QNH/QFE increase                          | QNH decrease and QFE increases  | QNH increase and QFE decreases       |
| 382. | For carburetor ice to form , the outside air must be -   | Bellow freezing                                | Moist                                     | Dry   | Cold and moist                       |
| 383. | Air at the upper levels of the atmosphere is diverging, what would you expect at he surface ?                                      | Rise in pressure with clouds dissipating       | Rise in pressure with clouds dissipating  | Fall in pressure with cloud dissipating   | Fall in pressure with cloud forming. |
| 384. | What causes the formation of aircraft contrails at certain altitudes ?   | Water vapour that condenses behind the engines | Spot particles from the engine exhaust    | Water vapour that condenses in the wing tips due to pressure changes in the relative warm air | Un burnt fuel                        |
| 385. | If ice forms over the static vent of an aeroplane and blocks it during the climb , the air speed indicator will read               | Zero   | Too fast                                  | Too slow  | Correctly                            |
| 386. | Flying into an area where the cloud base is lowering to within 1000ft of the terrain , ice starts to form on the wings your course | climb, even though it means entering cloud.    | Descend into warmer air, but continue on. | maintin track and level .   | turn back                            |

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|      | of action is to -  |  |  |   |  |
| 387. | Weather formation for certain aerodromes is available in recorded form on the VOLMET service - | Through the post   | By radio   | Via the public telephone network.                               | From ATC prior to flight.  |
| 388. | With the approach of a cold front, temp. will  | Decrease   | Remain the same  | Increase  | Decrease then increase   |
| 389. | A weather forecast is --<br>-----  | an observer  | a prediction   | a landing forecast  | a trend forecast   |
| 390. | A trough of low pressure is generally associated with:   | convergence causing increased cloud and precipitation                  | divergence causing increased cloud and precipitation   | subsidence causing increased cloud and precipitation            | subsidence causing decreased cloud and precipitation               |
| 391. | A ridge of high pressure is generally associated with:   | convergence causing increased cloud and precipitation                  | divergence causing increased cloud and precipitation   | divergence causing cloud to break up and more precipitation     | divergence and subsidence causing clear skies and good weather     |
| 392. | A small low established within the circulation of another low is called                        | a trough   | a col  | an anticyclone  | a secondary depression   |
| 393. | An area of indeterminate pressure between two lows and two highs is called:                    | a trough   | a ridge  | a col   | a saddle   |
| 394. | A trough of low pressure is:   | a trough a small low established within the circulation of another low | a ridge an extension or elongation of a low pressure system along an axis on each side of which pressure increases | a centre of pressure surrounded on all sides by higher pressure | an area where the pressure is lower than anywhere else in the area |
| 395. | A Katabatic wind can result in:  | An increase in temperature.  | Fog in the valley at night   | Thunderstorms in summer.  | Stratus cloud.   |

| <i>Navigation</i> |  |  |  |   |   |
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| SL NO             | Question   | Option_1   | Option_2   | Option_3  | Option_4                                      |
| 1.                | The maximum range at which an aircraft at FL250 can receive transmissions from a VHF R/T station at 300 ft is: | 200 nm   | 219 nm   | 175 nm  | 198 nm  |
| 2.                | The greatest range for a surface wave will be at a frequency of:   | 198 KHz  | 121.5 MHz  | 2,182 KHz                                       | 4,300 MHz                                     |
| 3.                | The reduction in the power available in a radio wave as the distance from a transmitter increases is known as: | Dissipation  | Diffraction  | Attenuation                                     | Refraction                                    |
| 4.                | An advantage of FM when compared with AM is:   | Less susceptible to static interference                | Smaller bandwidth                                    | Easier to demodulate (ie extract information)   | More suitable for use at lower frequencies    |
| 5.                | Which of the following frequencies is likely to experience the most severe static interference?                | 121.5 MHz  | 500 KHz  | 4,300 MHz                                       | 5,500 KHz                                     |
| 6.                | The highest levels of ionisation will be found:  | At high latitudes in summer                            | At low latitudes in summer                           | At high latitudes in winter                     | At low latitudes in winter                    |
| 7.                | Concerning skywave propagation, which of the following is correct?   | The D-layer attenuates LF and MF frequencies by night. | The D-layer attenuates LF and MF frequencies by day. | The D-layer attenuates HF frequencies by night. | The D-layer attenuates HF frequencies by day. |

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| 8.  | The phenomenon of coastal refraction which affects the accuracy of ADF bearings:  | is most marked at night.                             | can be minimised by using beacons situated well inland.   | can be minimised by taking bearings where the signal crosses the coastline at right angles. | is most marked one hour before to one hour after sunrise and sunset.                     |
| 9.  | ADF Quadrantal Error is caused by:  | static build up on the airframe and St. Elmo's Fire. | the aircraft's major electrical axis, the fuselage, reflecting and re-radiating the incoming NDB transmissions. | station interference and/or night effect.   | NDB signals speeding up and bending as they cross from a land to water propagation path. |
| 10. | The magnitude of the error in position lines derived from ADF bearings that are affected by coastal refraction may be reduced by:                                   | selecting beacons situated well inland.              | only using beacons within the designated operational coverage.  | choosing NON A2A beacons.   | choosing beacons on or near the coast.   |
| 11. | Each NDB has a range promulgated in the COMM section of the Air Pilot. Within this range interference from other NDBs should not cause bearing errors in excess of: | day $\pm 5^\circ$                                    | night $\pm 10^\circ$  | day $\pm 6^\circ$   | night $\pm 5^\circ$  |
| 12. | In an ADF system, night effect is most pronounced:  | during long winter nights.                           | when the aircraft is at low altitude.   | when the aircraft is at high altitude.  | at dusk and dawn.  |
| 13. | The principal propagation path employed in an NDB/ADF system is:  | skywave  | surface wave  | direct wave   | ducted wave  |

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| 14. | The Designated Operational Coverage quoted for VOR beacons in the COMM section of the Air Pilot:                      | Is only applicable by day.  | Guarantees a Protection Ratio of at least 3 to 1 by day and night.          | Defines the airspace within which an aircraft is assured of protection from interference from other VORs on the same channel. | Is determined by the type of surface over which the signal will have to travel.                 |
| 15. | A Conventional VOR:   | has an FM reference signal and an AM variable signal.                                 | has a 150Hz reference signal and a 90Hz variable signal                     | has an AM reference signal and a 150 Hz variable signal   | has an AM reference signal and an FM variable signal.   |
| 16. | Concerning conventional and Doppler VORs (DVOR), which of the following is correct?                                   | There is no way of knowing from the instrumentation display which type is being used. | The DVOR will always have a "D" in the ident.                               | The DVOR has a higher pitch ident than the standard VOR.  | The conventional VOR has less site error.   |
| 17. | A VOR beacon ceases to transmit its normal identification which is substituted by 'TST'. This means that:             | The beacon may be used providing that extreme caution is used.                        | The beacon is undergoing maintenance or calibration and should not be used. | This is a temporary short range transmission and will have approximately half its normal range.                               | The beacon is under test and pilots using it should report its accuracy to air traffic control. |
| 18. | An aircraft is required to intercept and home to a VOR along the 064 Radial. The OBS should be set to:                | 064 to get correct needle sense and a TO indication.                                  | 244 to get correct needle sense and a TO indication.                        | 064 to get correct needle sense and a FROM indication.  | 244 to get correct needle sense and a FROM indication.  |
| 19. | An aircraft wishes to track towards a VOR along the 274 radial. If variation is 10° W what should be set on the OBS ? | 274   | 264   | 94  | 84  |
| 20. | A VOR receiver in an aircraft measures the  | 140   | 40  | 320   | 220   |

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|     | phase difference from a DVOR as 220°. Which radial is the aircraft on?  |   |   |   |   |
| 21. | The normal maximum error which might be expected with a VOR bearing is:                                       | plus or minus V   | plus or minus 2°  | plus or minus 5°  | plus or minus 10°   |
| 22. | The coverage of an ILS localiser extends to either side of the on course line out to a range of nm.           | 10° 35  | 35° 10  | 35° 17  | 25° 25  |
| 23. | The upper and lower limits of an ILS glide path transmitter having a 3.5° glide slope are:                    | 6.125° 1.575°   | 7.700° 1.225°   | 5.250° 1.350°   | 3.850° 3.150°   |
| 24. | The minimum angle at which a false glide path is likely to be encountered is:                                 | 6 degrees   | 5.35 degrees  | normal glide slope times 1.75   | normal glide slope times 0.70   |
| 25. | The visual and aural indications obtained when overflying an ILS middle marker are:                           | continuous low pitched dashes with synchronised blue light.       | continuous high pitched dots with synchronised amber light. | alternating medium pitch dots and dashes with amber light.                        | one letter in Morse with synchronised white light.                      |
| 26. | In elevation the upper and lower limits of an ILS glide path transmitter having a 3.0 degree glide slope are: | 0.35° 0.70°   | 3.00° at least 6°   | 5.25° 1.35°   | 10.0° 35.0°   |
| 27. | A category 2 ILS installation :   | provides accurate guidance down to 50' above the horizontal plane | has a steep glide path, normally 7.5°.                      | provides accurate guidance down to the runway and along the runway after landing. | has a false glide path that is exactly twice the true glide path angle. |

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|     |  | containing the runway threshold.                       |  |   |  |
| 28. | An aircraft tracking to intercept the ILS localiser inbound on the approach side but outside the published coverage angle: | will receive false on-course or reverse sense signals. | will not normally receive signals.                     | will receive signals without coding.                      | can expect signals to give correct indications.          |
| 29. | The outer marker of an ILS installation has a visual identification of:  | alternating dots and dashes on a blue light.           | continuous dots at a rate of 3 per second, blue light. | continuous dashes at a rate of 2 per second, amber light. | continuous dashes at a rate of 2 per second, blue light. |
| 30. | The coverage of the ILS glideslope in azimuth is:  | $\pm 8^\circ$ out to 1 Onm                             | $\pm 10^\circ$ out to 8nm                              | $\pm 12^\circ$ out to 17nm                                | $\pm 35^\circ$ out to 25nm                               |
| 31. | To double the range of a primary radar would require the power to be increased by a factor of.                             | 2  | 4  | 8   | 16   |
| 32. | To improve the resolution of a radar display requires:   | a narrow pulse width and a narrow beam width           | a high frequency and a large reflector                 | a wide beamwidth and a wide pulse width                   | a low frequency and a narrow pulse width                 |
| 33. | An advantage of a phased array (slotted antenna) is:   | better resolution                                      | less power required                                    | reduced sidelobes and clutter                             | all of the above   |
| 34. | The factor which limits the minimum detection range of a radar is:   | pulse repetition interval                              | transmitter power                                      | pulse width   | pulse repetition frequency                               |
| 35. | The bearing of a primary radar is measured by:   | phase comparison                                       | searchlight principle                                  | lobe comparison   | DF techniques  |
| 36. | When carrying out a precision radar  | 0.5 nm   | 2 nm   | 3 nm  | 5 nm   |

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|     | approach, talkdown normally ceases atnm from touchdown:   |   |  |   |  |
| 37. | A ground based radar with a scanner rotation of 60rpm, a beam width in the order of .5 ° and a PRF of 10000pps would be:    | an Airfield Surface Movement Indicator with a theoretical range of 8nm. | a Precision Approach Radar.  | an Airfield Surface Movement Indicator with a theoretical range of 16nm.                          | a high resolution Surveillance Approach Radar.                     |
| 38. | The SHF band has been selected for Airfield Surface Movement Indicator (ASMI) radars in preference to the EHF band because: | the EHF band causes unacceptable radiation hazards to personnel.        | the attenuation caused by precipitation is greater in the EHF band and reduces the radar's effective range and usefulness. | the EHF band is not suitable for the provision of the very narrow beams needed for an ASMI radar. | target discrimination using the SHF band is better.                |
| 39. | The correct sequence of colours of a colour Airborne Weather Radar as returns get stronger is:                              | red yellow green.   | yellowgreen red.   | green yellow red.   | red green yellow.  |
| 40. | A false indication of water may be given by the Airborne Weather Radar display when:  | flying over land with the Land/Sea switch in the Sea position.          | flying over mountainous terrain.   | there is cloud and precipitation between the aircraft and a cloud target.                         | attempting to use the mapping beam for mapping in excess of 50 nm. |
| 41. | The antenna of an Airborne Weather Radar is stabilised:   | in pitch, roll and yaw.   | in pitch and roll.   | in pitch and roll whether the stabilisation is on or off.   | in pitch and roll but only when 0° tilt has been selecte           |
| 42. | The colours used to denote variations in rainfall rate on an Airborne Weather Radar screen are.... for                      | black, yellow, green, magenta   | black, green, yellow, magenta  | grey, green, yellow, red.   | black, green, yellow, red  |

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|     | very light or no returns, ..... for light returns,..... for medium returns and .... for strong returns.               |   |  |   |   |
| 43. | The special SSR codes are as follows: emergency , radio failure, unlawful interference with the conduct of the flight | 7700; 7600; 7500.   | 7500; 7700; 7600;.   | 7600; 7500; 7700.   | 7500; 7600; 7700.   |
| 44. | If the SSR transponder IDENT button is pressed  | it causes a momentary distinctive display to appear on the controller's screen. | an identification pulse is automatically and continuously transmitted for 20 seconds, 4.35p sec before the last framing pulse. | an identification pulse is automatically and continuously transmitted for 10 seconds, 4.35p sec after the last framing pulse. | an identification pulse is automatically and continuously transmitted for 20 seconds, 4.35p sec after the last framing pulse. |
| 45. | The SSR code which is appropriate for a UK FIR (inbound) crossing, where no other "squawk" has been allocated is:     | 7500  | 7600   | 7700  | 2000  |
| 46. | A DME transponder does not respond to pulses received from radars other than DME because:                             | each aircraft transmits pulses at a random rate.                                | DME transmits and receives on different frequencies.   | it will only accept the unique twin DME pulses.   | DME only responds to the strongest 100 interrogators.   |
| 47. | A DME receiver is able to distinguish between replies to its own interrogations and replies to other aircraft         | DME is secondary radar and each aircraft transmits and receives on a different  | DME transponders reply to interrogations with twin pulses and the airborne equipment ejects all                                | Each aircraft transmits pulses at a random rate and will only accept synchronised replies.                                    | When DME is in the search mode it will only accept pulses giving the correct range.   |

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|     | because:  | frequency.  | other pulses.  |  |   |
| 48. | When a DME transponder becomes saturated:   | it reverts to standby.  | it increases the number of pulse pairs to meet the demand.   | it increases the receiver threshold to remove weaker signals.  | it goes into a selective response mode of operation.  |
| 49. | DME is a ..... radar operating in the ..... band and uses ..... in order to obtain range information. The correct words to complete the above statement are:    | primary SHF CW signals  | secondary UHF twin pulses  | secondary SHF "jittered pulses"  | primary UHF pulse pairs   |
| 50. | DME and VOR are "frequency paired" because:   | the same receiver can be used for both aids.  | the VOR transmitter is easily converted to the required DIVE frequency.  | "cockpit workload" is reduced.   | both ground transmitter aerials can be placed on the same site if require   |
| 51. | A DME receiver is able to distinguish between replies to its own interrogation pulses and those intended for other aircraft using the same transponder because: | DME is a secondary radar and each aircraft transmits and receives on a different frequency. | DME transponders reply to interrogations by means of twin pulses and the airborne equipment rejects all single pulses. | each aircraft transmits pulses at a random rate("jittering") and will only accept replies that match this randomisation. | when DME is in the range search mode it will accept only pulses separated by + or - 63MHz from the interrogation frequency. |
| 52. | The minimum number of satellites required for a 3D fix is:  | 3   | 4  | 5  | 6   |
| 53. | The purpose of the pseudo-random noise codes in NAVSTAR/GPS is to:  | identify the satellites   | pass the almanac data  | pass the navigation and system data  | pass the ephemeris and time information   |
| 54. | The minimum number of satellites required   | 3   | 4  | 5  | 6   |

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|     | for receiver autonomous integrity monitoring is:   |  |  |   |   |
| 55. | The most accurate satellite fixing information will be obtained from:  | NAVSTAR/GPS & GLONASS  | TRANSIT & NAVSTAR/GPS  | COSPAS/SARSAT & GLONASS   | NAVSTAR/GPS & COSPAS/SARSAT                                       |
| 56. | The position derived from NAVSTAR/GPS satellites may be subject to the following errors:                       | selective availability, skywave interference, GDOP   | propagation, selective availability, ephemeris   | GDOP, static interference, instrument                                       | ephemeris, GDOP, siting   |
| 57. | The availability of two frequencies in GNSS:   | removes SV ephemeris and clock errors  | reduces propagation errors   | reduces errors caused by GDOP   | removes receiver clock errors                                     |
| 58. | The NAVSTAR/GPS reference system is:   | A geo-centred 3D Cartesian co-ordinate system fixed with reference to the sun              | A geo-centred 3D Cartesian co-ordinate system fixed with reference to the prime meridian, equator and pole | A geo-centred 3D Cartesian co-ordinate system fixed with reference to space | A geo-centred 3D system based on latitude, longitude and altitude |
| 59. | The initial range calculation at the receiver is known as a pseudo-range, because it is not yet corrected for: | receiver clock errors  | receiver and satellite clock errors  | receiver and satellite clock errors and propagation errors                  | receiver and satellite clock errors and ephemeris errors          |
| 60. | An all in view receiver:   | informs the operator that all the satellites required for fixing and RAIM are in available | checks all the satellites in view and selects the 4 with the best geometry for fixing                      | requires 5 satellites to produce a 4D fix                                   | uses all the satellites in view for fixing                        |
| 61. | When using GNSS to   | barometric   | GPS altitude   | Radio altimeter   | Either barometric or  |

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|     | carry out a non-precision approach the MDA will be determined using:                                   | altitude   |  | height  | radio altimeter altitude   |
| 62. | If an aircraft manoeuvre puts a satellite being used for fixing into the wing shadow then:             | the accuracy will be unaffected  | the accuracy will be temporarily downgraded  | the receiver will automatically select another satellite with no degradation in positional accuracy | the receiver will maintain lock using signals reflected from other parts of the aircraft with a small degrading of positional accuracy |
| 63. | Which of the following statements concerning NAVSTAR/GPS time is correct?                              | satellite time is the same as UTC  | the satellite runs its own time based on seconds and weeks which is independent of UTC | the satellite runs its own time based on seconds and weeks which is correlated with UTC             | satellite time is based on sidereal time   |
| 64. | The advantage of a narrow beam in a primary pulsed radar system is that:                               | target definition is improved.   | system range (ignoring any PRF limitations) is improved                                | differentiation between adjacent targets is more likely to occur.                                   | all of the above advantages apply.   |
| 65. | The middle marker of an ILS system has an audible code which is:                                       | alternating dots and dashes at 400Hz.  | alternating dots and dashes at 1300Hz.   | alternating dots and dashes at 3000Hz.  | high pitch dots.   |
| 66. | SELCAL functional check must be made:  | only on the ground before departure of a flight into an area where SELCAL is available | on initial contact and when entering an area where SELCAL is available.                | with the local ATCC before take-off.  | when crossing the coast inbound  |
| 67. | When using an Airborne Weather Radar in the weather mode the strongest returns on the screen indicate: | areas where high concentrations of large water droplets exist.                         | areas of moderate or severe turbulence.  | areas of probable windshear.  | areas of thunderstorm activity.  |

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| 68. | Operational Performance Category 2 is awarded a lower than and a RVR   | precision instrument approach and landing; MDH; 60m (200ft); not less than 300m. | precision instrument approach and landing; DH; 60m (200ft) but not lower than 30m (100ft); not less than 300m. | precision instrument approach and landing; DH; 30m (100ft) or no DH; not less than 200m. | ILS approach and landing; DH; 60m (200ft) but not lower than 30m (100ft); not less than 300m. |
| 69. | The rate of descent of an aircraft with an approach speed of 140kt on an ILS approach with a glide path angle of 3.25° is (use 1 in 60): | 700 ft/min   | 780 ft/min   | 860 ft/min   | 1050 ft/min   |
| 70. | In a conventional VOR the reference signal is ..... and the variable signal is .....   | FM AM  | AM FM  | FM FM  | AM AM   |
| 71. | The correct SSR code to indicate radio failure is:   | 7700   | 7600   | 2000   | 7500  |
| 72. | VLF surface waves achieve greater range than LF surface waves because:   | VLF diffraction is greater and attenuation is less.                              | VLF diffraction and attenuation are less.  | VLF diffraction is less and attenuation is greater.                                      | VLF diffraction and attenuation are greater.  |
| 73. | When using airborne weather radar to obtain a fix from a ground feature, the pencil beam is used in preference to the mapping beam:      | because the wider beam gives better definition of ground features.               | the angle of tilt is restricted in the mapping mode.   | at ranges over about 50 nm because greater power can be concentrated in the beam.        | because it overcomes the problems of "hill" shadows.  |
| 74. | On selecting a DME beacon the pointer or counters of a DME indicator revolve   | a range search and that the aircraft's DME receiver is searching for             | a range search and that the aircraft's DME interrogator is searching for                                       | a range search and that the DME beacon's receiver is searching for                       | that the system is "jittering".   |

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|     | rapidly to a maximum value and return to zero and continue the process. This indicates:  | responses from the ground transponder.                      | responses from the ground transponder.                         | interrogations from the aircraft.                            |   |
| 75. | A class B true bearing from a ground VDF station is ..... with an accuracy of .....  | QTE +/-5°   | QDM +/-5°  | QUJ +/-5°  | QDR +/-5°   |
| 76. | Category 2 ILS installation provides accurate guidance to:   | 100 ft on the threshold QFE.                                | 50 ft above aerodrome elevation.                               | 200 ft above aerodrome elevation.                            | 50 ft above the plane containing the runway threshold         |
| 77. | To provide 3D positioning when flying under IFR a stand alone GPS equipment needs a minimum of:  | 3 satellites with adequate elevation and suitable geometry. | 6 satellites above the horizon.                                | 4 satellites with adequate elevation and suitable geometry.  | 5 satellites with adequate elevation and suitable geometry.   |
| 78. | An apparent increase in transmitted frequency, proportional to the velocity of the transmitter, is caused by:  | the receiver moving towards the transmitter.                | the transmitter moving away from the receiver.                 | the transmitter moving towards the receiver.                 | the transmitter and the receiver moving away from each other. |
| 79. | With reference to the Navstar Global Positioning System (GPS) the horizontal accuracy figures quoted are based upon the assumption that position is referenced to: | local datums.   | European Datum 1950.   | Nouvelle Triangulation de France (NTF) 1970.                 | World Geodetic System 1984 (WGS84) Datum.                     |
| 80. | Which of the following statements is correct ?   | Primary radar uses echoes from a reflecting object,         | Primary radar gives range not bearing, of a reflecting object. | Secondary always measures the bearing of a reflecting object | Only secondary radar can be carried on an aircraft.           |

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|     |   | whereas secondary radar uses responses from a transponder beacon.                      |  | more accurately than primary radar.  |   |
| 81. | If an aircraft's groundspeed reduces by 10kt whilst it is flying an ILS approach with a 3° glidepath then its rate of descent:  | should increase by 50 ft/min.  | should decrease by 25 ft/min.                    | should decrease by 50 ft/min.  | does not need to be adjusted as the speed change is too small to have any significant effect. |
| 82. | Whilst in flight you are using a Doppler VOR. Which of the following statements is true?  | The first letter of the DVOR identification is 'D'.                                    | The DVOR identification is followed by six dots. | You are unable to differentiate between a conventional and Doppler VOR when using the aircraft's system. | The last letter of the DVOR identification is a 'Z'.  |
| 83. | With reference to VDF let-downs or QGH let-downs available at the same airfield:  | a VDF let-down is controlled by the pilot; a QGH is controlled by the ground operator. | both are controlled by the pilot.                | both are controlled by the ground operator.  | a VDF let-down is controlled by the ground operator; a QGH is controlled by the pilot.        |
| 84. | The Global Navigation Satellite System (GNSS) is a system which consists of ..... active satellites plus ..... operational spare satellites in ..... orbital planes around the earth. A minimum of ..... satellites are needed to provide a | 21; 3; 6; 3; 3;  | 21; 3; 4; 3; 2;                                  | 21; 3; 6; 4; 3;  | 24; 3; 5; 3; 3;   |

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|     | ..... dimensional fix.   |  |  |   |   |
| 85. | A pilot hears the morse TST from a navigational aid. This means that:  | The station is on test and may be used with caution. | The facility is transmitting for test purposes only and must not be used.        | The station accuracy has just been checked and it has passed the test     | The aid may be used with caution and the accuracy reported to ATC       |
| 86. | The two factors which affect the amount of Doppler shift measured by an aircraft's system are:   | TAS and height of the terrain.                       | Ground speed and transmitted wavelength.   | Transmitted frequency and the depression angle of the transmission beams. | Aircraft altitude and the Doppler's pulse repetition frequency.         |
| 87. | With reference to the Global Positioning System (GPS): The minimum number of satellites, with adequate elevation and suitable geometry, to provide the RAIM function and to isolate the faulty satellite is: | 6  | 5  | 3   | 24  |
| 88. | An accuracy of 5° in VOR bearings received at an aircraft is achieved:   | within the cone of confusion by day only.            | at all ranges within the Design Operational Coverage (DOC) limits day and night. | within the DOC limits by day only.  | beyond the cone of confusion as far as the DOC limits by day and night. |
| 89. | A typical ILS localiser frequency is:  | 329.30Mhz  | 110.30Mhz  | 110.45Mhz   | 75.00Mhz  |
| 90. | The maximum safe fly-up indication on an ILS approach when using a meter with a 5 dot display is:  | 0.35°  | 2.5dots  | 1.3dots   | 0.7°  |
| 91. | Which of the following would be the normal fix   | DME/DME  | VOR/DME  | VOR/NDB   | VOR/VOR   |

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|     | for a Basic RNAV (B-RNAV) equipment:  |  |   |  |   |
| 92. | Which following statement is true?  | Primary radar uses echoes from a reflecting object whereas secondary radar uses responses from a transponder.    | Primary radar can only find the range of a reflecting object.         | Secondary radar always measures the bearing of a reflecting object more accurately than a primary. | Only secondary, not primary, radar can be carried in an aircraft. |
| 93. | Two examples of secondary radar are:  | VOR and DME  | AWR and SSR   | SSR and DME  | VOR and DECCA   |
| 94. | The areas of greatest turbulence associated with storm clouds are indicated on the colour screen of an Airborne Weather Radar by:             | Cyclic Contouring which emphasizes the high intensity rainfall areas by alternately flashing them red and black. | the thinnest lines of colour which indicate steep rainfall gradients. | the black holes produced by the Iso-echo Contour facility.   | selecting the Sensitivity Time Control function.                  |
| 95. | The Global Positioning System frequency available for use by civil operators is:  | 1227.6MHz  | 1575.42MHz  | 2227.5MHz  | 1783.74MHz  |
| 96. | With reference to NAVSTAR GPS; when used as a stand-alone system, the minimum number of satellites which must be in view at any one time, is: | 6  | 7   | 4  | 5   |
| 97. | The principle of operation of MLS is:   | lobe comparison of scanning beams.   | phase comparison of directional beams.                                | time referenced scanning beams.  | frequency comparison of reference beams.                          |
| 98. | What equipment does   | VHF radio  | VOR   | VOR/DME  | None  |

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|      | an aircraft need when carrying out a VHF direction finding letdown?                           |  |  |  |  |
| 99.  | Which of the following is an advantage of a VHF direction finding let down?                   | no equipment required in the aircraft                    | no special equipment required in the aircraft or on the ground         | only a VHF radio is needed in the aircraft                               | it is pilot interpreted, so ATC is not required              |
| 100. | Which of the following statements regarding VHF Direction Finding (VDF) is most accurate.     | it is simple and only requires a VHF radio on the ground | it is simple and requires a VHF radio and DF equipment in the aircraft | it is simple requiring only VHF radios on the ground and in the aircraft | it uses line of sight propagation                            |
| 101. | A NDB transmits a signal pattern which is:  | a 30 Hz polar diagram                                    | omni -directional  | a bi-lobal pattern   | a beam rotating at 30 Hz                                     |
| 102. | The accuracy of ADF within the Designated Operational Coverage (DOC) by day is:               | +/-1°  | +/-2°  | +/-5°  | +/-10°   |
| 103. | Which of the following is likely to have the greatest effect on the accuracy of ADF bearings? | interference from other NDB's particularly by day        | interference between aircraft aerials                                  | interference from other NDB's, particularly at night                     | frequency drift at the ground station                        |
| 104. | Which of the following are all errors associated with ADF?                                    | selective availability, coastal refraction, night effect | night effect, quadrantal error, lane slip                              | mountain effect, station interference, static interference               | selective availability, coastal refraction, quadrantal error |
| 105. | What action must be taken to receive a bearing from an ADF?                                   | BFO on   | Select the loop position   | Both the loop and sense aerials must receive the signal                  | Select the LOOP position                                     |
| 106. | When is coastal error at its worst for an aircraft at low level?                              | beacon inland at an acute angle to the coast             | beacon inland at 90° to the coast                                      | beacon close to the coast at an acute angle to the coast                 | beacon close to the coast at 90° to the coast                |

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| 107. | Which of the following is the most significant error in ADF?  | quadrantal error  | coastal refraction  | precipitation static                           | static from Cb   |
| 108. | Which of the following may cause inaccuracies in ADF bearings?  | static interference, height effect, lack of failure warning | station interference, mountain effect, selective availability | coastal refraction, slant range, night effect  | lack of failure warning, station interference, static interference   |
| 109. | The principle used to measure VOR bearings is:  | phase comparison  | switched cardioids  | difference in depth of modulation              | pulse technique  |
| 110. | If the VOR accuracy has a limit of 1°, what is the maximum cross track error at 200 nm?                   | 3.0 nm  | 2.5 nm  | 2.0 nm   | 3.5 nm   |
| 111. | What is the maximum distance apart a VOR and TACAN can be located and have the same identification?       | 2000 m  | 60 m  | 600 m  | 6 m  |
| 112. | When tracking a VOR radial inbound the aircraft would fly:  | a constant track  | a great circle track  | a rhumb line track                             | a constant heading   |
| 113. | Using a VOR beyond the limits of the DOC may result in:   | loss of signal due to line of sight limitations             | interference from other VOR's operating on the same frequency | skywave contamination of the VOR signal        | scalloping errors  |
| 114. | When identifying a co-located VOR/DME the following signals are heard in the Morse code every 30 seconds: | 4 identifications in the same tone                          | 4 identifications with the DME at a higher tone               | 4 identifications with the DME at a lower tone | no DME identification, but if the VOR identification is present and a range is indicated then this shows that both are serviceable |

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| 115. | When tracking the 090 radial outbound from a VOR, the track flown is:  | a straight line                | a rhumb line  | a great circle                             | a constant true heading   |
| 116. | For a conventional VOR a phase difference of 090° would be achieved by flying ..... from the beacon:                           | west                           | north   | east                                       | south   |
| 117. | The quoted accuracy of VOR is valid:   | at all times                   | by day only   | at all times except night                  | at all times except dawn and dusk                                   |
| 118. | Which of the following provides distance information?  | DME                            | VOR   | ADF  | VDF   |
| 119. | Which of the following would give the best indication of speed?  | a VOR on the flight plan route | a VOR off the flight plan route                         | a DME on the flight plan route             | a DME off the flight plan route                                     |
| 120. | A DME beacon will become saturated when more than about ..... aircraft are interrogating the transponder.                      | 10                             | 50  | 100  | 200   |
| 121. | A typical DME frequency is:  | 1000 MHz                       | 1300 MHz  | 1000 KHz                                   | 1575 MHz  |
| 122. | The DME in an aircraft, cruising at FL210, fails to achieve lock on a DME at msl at a range of 210 nm. The reason for this is: | the beacon is saturated        | the aircraft is beyond the maximum usable range for DME | the aircraft is beyond line of sight range | the aircraft signal is too weak at that range to trigger a response |
| 123. | What information does military TACAN provide for civil aviation users?   | magnetic bearing               | DME   | Nothing                                    | DME and magnetic bearing  |

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| 124. | The DME counters are rotating continuously. This indicates that:   | the DME is unserviceable                            | the DME is trying to lock onto range     | the DME is trying to lock onto frequency                | the DME is receiving no response from the ground station        |
| 125. | On a DME presentation the counters are continuously rotating. This indicates:                                | the DME is in the search mode                       | the DME is unserviceable                 | the DME is receiving no response from the transponder   | The transponder is unserviceable                                |
| 126. | The errors of an ILS localiser (LLZ) beam are due to:  | emission sidelobes                                  | ground reflections                       | spurious signals from objects near the runway           | interference from other systems operating on the same frequency |
| 127. | The amplitude modulation of the ILS outer marker is ..... and it illuminates the ..... light in the cockpit. | 400 Hz, blue  | 1300 Hz, amber                           | 400 Hz, amber   | 1300 Hz, blue   |
| 128. | The principle of operation of the ILS localiser transmitter is that it transmits two overlapping lobes on:   | different frequencies with different phases         | the same frequency with different phases | the same frequency with different amplitude modulations | different frequencies with different amplitude modulations      |
| 129. | The ILS glideslope transmitter generates false glidepaths because of:  | ground returns from the vicinity of the transmitter | back scattering of the signals           | multiple lobes in the radiation pattern                 | reflections from obstacles in the vicinity of the transmitter   |
| 130. | A category III ILS system provides accurate guidance down to:  | the surface of the runway                           | less than 50 ft                          | less than 100 ft  | less than 200 ft  |
| 131. | The sequence of marker colours when flying an ILS approach is:   | white, blue, amber                                  | blue, white, amber                       | blue, amber, white                                      | amber, blue, white  |

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| 132. | The sensitive area of an ILS is the area aircraft may not enter when:                        | ILS operations are in progress   | category 1 ILS operations are in progress  | category II/III ILS operations are in progress           | the ILS is undergoing calibration  |
| 133. | The ILS localiser is normally positioned:  | 300 m from the downwind end of the runway  | 300 m from the threshold   | 300 m from the upwind end of the runway                  | 200 m abeam the threshold  |
| 134. | An aircraft is flying downwind outside the coverage of the ILS. The CDI indications will be: | unreliable in azimuth and elevation  | reliable in azimuth, unreliable in elevation   | no indications will be shown                             | reliable in azimuth and elevation  |
| 135. | Distance on MLS is measured by:  | measuring the time taken for the primary radar pulse to travel from the MLS transmitter to the aircraft receiver | measuring the time taken for the secondary radar pulse to travel from the MLS transmitter to the aircraft receiver | phase comparison between the azimuth and elevation beams | co-located DME   |
| 136. | Which of the following is an advantage of MLS?   | can be used in inhospitable terrain  | uses the same aircraft equipment as ILS  | has a selective access ability                           | is not affected by heavy precipitation                                   |
| 137. | Primary radar operates on the principle of   | transponder interrogation  | pulse technique  | phase comparison   | continuous wave emission   |
| 138. | The definition of a radar display will be best with:   | narrow beamwidth and narrow pulsewidth   | narrow beamwidth and wide pulsewidth   | wide beamwidth and narrow pulsewidth                     | wide beamwidth and wide pulsewidth                                       |
| 139. | The main advantage of a continuous wave radar over a pulsed radar is:                        | more complex equipment but better resolution and accuracy  | removes the minimum range restriction  | smaller more compact equipment                           | permits measurement of Doppler in addition to improved range and bearing |
| 140. | In a primary pulsed radar the ability to discriminate in azimuth is a factor of:             | Pulse width  | Beamwidth  | Pulse recurrence rate                                    | Rate of rotation   |

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| 141. | The maximum range of a ground radar is limited by:        | pulse width  | peak power                                  | average power   | pulse recurrence rate  |
| 142. | What does pulse recurrence rate refer to?                 | the number of cycles per second                              | the number of pulses per second             | the ratio of pulse width to pulse repetition period                                   | the delay known as flyback or dead time                        |
| 143. | The best radar for measuring very short ranges is:        | a continuous wave primary radar                              | a pulsed secondary radar                    | a pulsed primary radar  | a continuous wave secondary radar                              |
| 144. | The main advantage of a slotted scanner is:               | reduces sidelobes and directs more energy into the main beam | removes the need for azimuth slaving        | sidelobe suppression  | can produce simultaneous map and weather information           |
| 145. | Which of the following is a primary radar system?         | SSR  | DME   | GPS   | AWR  |
| 146. | On what principle does primary ATC radar work?            | pulse technique  | pulse comparison                            | continuous wave   | transponder interrogation                                      |
| 147. | Short range aerodrome radars will have ..... wavelengths. | millimetric  | centimetric                                 | decimetric  | metric   |
| 148. | The airborne weather radar (AWR) cannot detect:           | snow   | moderate rain                               | dry hail  | wet hail   |
| 149. | The use of the AWR on the ground is:                      | not permitted  | permitted provided reduced power is reduced | permitted provided special precautions are taken to safeguard personnel and equipment | only permitted to assist movement in low visibility conditions |
| 150. | Which type of cloud does the AWR detect?                  | Cirro-cumulus  | Alto-stratus                                | Cumulus   | Stratus  |
| 151. | The AWR uses the cosecant squared beam                    | WEA  | CONT  | MAP   | MAN  |

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|      | in the ..... mode.  |  |  |   |   |
| 152. | On the AWR display the most severe turbulence will be shown:                    | in flashing red  | by a black hole  | by a steep colour gradient                                  | alternating red and white                                 |
| 153. | The ISO-ECHO circuit is incorporated in the AWR:                                | to allow ground mapping  | to alert pilots to the presence of cloud                       | to display areas of turbulence in cloud                     | to allow simultaneous mapping and cloud detection         |
| 154. | The main factors which affect whether an AWR will detect a cloud are:           | the size of the water droplets and the diameter of the antenna reflector | the scanner rotation rate and the frequency/wavelength         | the size of the water droplets and the wavelength/frequency | the size of the water droplets and the range of the cloud |
| 155. | In an AWR with a colour CRT, areas of greatest turbulence are indicated by:     | iso-echo areas coloured black  | large areas of flashing red                                    | iso-echo areas with no colour                               | most rapid change of colour                               |
| 156. | The cosecant squared beam is used for mapping in the AWR because:               | a greater range can be achieved  | a wider beam is produced in azimuth to give a greater coverage | a larger area of ground is illuminated by the beam          | it allows cloud detection to be effected whilst mapping   |
| 157. | On switching on the AWR a single line appears on the display. This means that:  | the transmitter is unserviceable   | the receiver is unserviceable                                  | the CRT is not scanning                                     | the antenna is not scanning                               |
| 158. | Doppler navigation systems use to determine the aircraft groundspeed and drift. | DVOR   | Phase comparison of signals from ground stations               | Frequency shift in signals reflected from the ground        | DME range measurement                                     |
| 159. | Which axes is the AWR stabilized in'?   | Pitch, roll and yaw  | Roll and yaw   | Pitch and roll  | Pitch only  |
| 160. | Why is the effect of returns from storms  | the frequency is too high  | SSR does not use the echo principle                            | The PRF is jittered   | By the use of MTI to remove stationary                    |

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|      | not a problem with SSR?   |  |   |   | and slow moving returns   |
| 161. | Which SSR mode A code should be selected when entering European airspace from an area where no code has been allocated? | 7700   | 7500  | 2000  | 7600  |
| 162. | The vertical position provided by SSR mode C is referenced to:  | QNH unless QFE is in use                             | 1013.25 HPa   | QNH   | WGS84 datum   |
| 163. | Why is a secondary radar display free from weather clutter?   | the frequencies are too low to detect water droplets | the frequencies are too high to detect water droplets | moving target indication is used to suppress the static generated by water droplets | the principle of the return of echoes is not used                             |
| 164. | The availability of 4096 codes in SSR is applicable to mode:  | A  | C   | S   | All   |
| 165. | LORAN C is available:   | globally   | in oceanic areas                                      | in continental areas  | in specified areas  |
| 166. | The principle of operation of LORAN C is:   | differential range by phase comparison               | differential range by pulse technique                 | range by pulse technique  | range by phase comparison   |
| 167. | The MDA for a non-precision approach using NAVSTAR/GPS is based on:   | barometric altitude                                  | radio altimeter                                       | GPS altitude  | GPS or barometric altitude  |
| 168. | If, during a manoeuvre, a satellite being used for position fixing is shadowed by the wing, the effect on position      | none   | the position will degrade                             | another satellite will be selected, so there will be no degradation of position     | the GPS will maintain lock using reflections of the signals from the fuselage |

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|      | will be:   |  |   |  |  |
| 169. | The height derived by a receiver from the NAVSTAR/GPS is:  | above mean sea level   | above ground level  | above the WGS84 ellipsoid  | pressure altitude  |
| 170. | The NAVSTAR/GPS constellation comprises:   | 24 satellites in 6 orbits  | 24 satellites in 4 orbits                                     | 24 satellites in 3 orbits  | 24 satellites in 8 orbits  |
| 171. | Selective availability may be used to degrade the accuracy of the NAVSTAR/GPS position. This is achieved by: | introducing an offset in the satellites clocks                           | random dithering of the broadcast satellites clock time       | random dithering of the broadcast satellites X, Y & Z co-ordinates   | introducing an offset in the broadcast satellites X, Y & Z co-ordinates                                    |
| 172. | The positioning of a GNSS aerial on an aircraft is:  | in the fm  | on the fuselage as close as possible to the receiver          | on top of the fuselage close to the centre of gravity                | under the fuselage   |
| 173. | NAVSTAR/GPS receiver clock error is removed by:  | regular auto-synchronisation with the satellite clocks                   | adjusting the pseudo-ranges to determine the error            | synchronisation with the satellite clocks on initialisation          | having an appropriate atomic time standard within the receiver.  |
| 174. | The contents of the navigation and systems message from NAVSTAR/GPS SVs include:                             | satellite clock error, almanac data, ionospheric propagation information | satellite clock error, almanac data, satellite position error | position accuracy verification, satellite clock time and clock error | ionospheric propagation information, X, Y & Z co-ordinates and corrections, satellite clock time and error |
| 175. | The NAVSTAR/GPS segments are:  | space, control, user   | space, control, ground  | space, control, air  | space, ground, air   |
| 176. | The preferred GNSS receiver for airborne application is:   | multiplex  | multi-channel   | sequential   | fast multiplex   |
| 177. | The best accuracy from satellite systems will be   | NAVSTAR/GPS and TNSS transit   | GLONASS and COSPAS/SARSAT                                     | GLONASS and TNSS transit   | NAVSTAR/GPS and GLONASS  |

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|      | provided by:  |  |  |   |   |
| 178. | The azimuth and elevation of the satellites is:   | determined by the satellite and transmitted to the receiver      | determined by the receiver from the satellite almanac data | transmitted by the satellite as part of the almanac   | determined by the receiver from the broadcast satellite X, Y, Z & T data                            |
| 179. | The skysearch carried out by a GNSS receiver:   | is done prior to each fix  | is done when the receiver position is in error             | involves the receiver downloading the almanac from each satellite before determining which satellites are in view | is the procedure carried out by the monitoring stations to check the accuracy of the satellite data |
| 180. | An aircraft GNSS receiver is using 5 satellites for RAIM. If the receiver deselects one satellite then the flight should be continued | using 4 satellites with the pilot monitoring the receiver output | using alternative navigation systems                       | using alternative radio navigation systems only   | using inertial reference systems only   |
| 181. | The WGS84 model of the earth is:  | a geoid  | a sphere   | an exact model of the earth   | an ellipse  |
| 182. | The frequency band of the NAVSTAR/GPS L1 and L2 frequencies is:   | VHF  | UHF  | EHF   | SHF   |
| 183. | The number of satellites required to produce a 4D fix is:   | 3  | 4  | 5   | 6   |
| 184. | How many satellites are needed for a 2D fix?  | 4  | 2  | 3   | 5   |
| 185. | Which of the following statements concerning ionospheric propagation errors is  | they are significantly reduced by the use of RAIM                | they are eliminated using differential techniques          | they are significantly reduced when a second frequency is available   | transmitting the state of the ionosphere to the receivers enables the error to reduced              |

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|      | true?  |                            |   |                        | to less than one metre   |
| 186. | Using differential GNSS for a non-precision approach, the height reference is:             | barometric                 | GNSS                                    | radio                  | radio or GNSS  |
| 187. | The number of satellites required to provide a 3D fix without RAIM is:                     | 4                          | 5                                       | 6                      | 3  |
| 188. | The number of satellites required for a fully operational NAVSTAR/GPS is:                  | 21                         | 18                                      | 24                     | 30   |
| 189. | Unauthorised' civilian users of NAVSTAR/GPS can access:                                    | the P and Y codes          | the P code                              | the C/A and P codes    | the C/A code   |
| 190. | When using GPS to fly airways, what is the vertical reference used?                        | barometric                 | GPS height                              | radio altitude         | average of barometric and GPS  |
| 191. | The nav/system message from GLONASS and NAVSTAR/GPS is found in the band.                  | SHF                        | UHF                                     | VHF                    | EHF  |
| 192. | Which GNSS system can be used for IFR flights in Europe?                                   | NAVSTAR/GPS                | GLONASS                                 | COSPAS/SARSAT          | TNSS transit   |
| 193. | During flight using NAVSTAR/GPS and conventional navigation systems, you see a large error | continue the flight in VMC | continue using the conventional systems | continue using the GPS | switch off the faulty system after determining which one is in error |

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|      | between the positions given by the systems. The action you should take is:                    |   |   |  |   |
| 194. | What is the purpose of the GPS control segment?   | to control the use of the satellites by unauthorised users                                      | to monitor the satellites in orbit  | to maintain the satellites in orbit  | degrade the accuracy of satellites for unauthorised users                               |
| 195. | In GNSS a fix is obtained by:   | measuring the time taken for signals from a minimum number of satellites to reach the aircraft. | measuring the time taken for the aircraft transmissions to travel to a number of satellites in known positions and return to the aircraft | measuring the pulse lengths of the sequential signals from a number of satellites in known positions | measuring the phase angle of the signals from a number of satellites in known positions |
| 196. | The inclination of a satellite is:  | the angle between the SV orbit and the equator  | the angle between the SV orbit and the polar plane  | 90° minus the angle between the SV orbit and the equator   | 90° minus the angle between the SV orbit and the polar plane                            |
| 197. | The distance measured between a satellite and a receiver is known as a pseudo-range because:  | it is measured using pseudo-random codes  | it includes receiver clock error  | satellite and receiver are continually moving in relation to each other                              | it is measured against idealised Keplerian orbits                                       |
| 198. | The task of the control segment is to:  | determine availability to users   | monitor the SV ephemeris and clock  | apply selective availability   | all of the above  |
| 199. | To provide 3D fixing with RAIM and allowing for the loss of one satellite requires ..... SVs: | 4   | 5   | 6  | 7   |
| 200. | In NAVSTAR/GPS the PRN codes are used to:   | differentiate between satellites  | pass satellite ephemeris information  | pass satellite time and ephemeris information  | pass satellite time, ephemeris and other information                                    |

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| 201. | An `all in view' satellite navigation receiver is one which:      | monitors all 24 satellites  | tracks selected satellites  | selects and tracks all (in view) satellites and selects the best four | tracks the closest satellites                                   |
| 202. | Which GPS frequencies are available for commercial air transport? | 1227.6 MHz only   | 1575.42 MHz only  | 1227.6 MHz and 1575.42 MHz  | 1227.6 MHz or 1575.42 MHz                                       |
| 203. | Which GNSS is authorised for use on European airways?             | GLONASS   | NAVSTAR/GPS   | Galileo   | COSPAS/SARSAT   |
| 204. | RAIM is achieved:   | by ground monitoring stations determining the satellite range errors which are relayed to receivers via geo-stationary satellites | by ground stations determining the X, Y & Z errors and passing the corrections to receivers using pseudolites | within the receiver   | any of the above  |
| 205. | The function of the receiver in the GNSS user segment is to:      | interrogate the satellites to determine range   | track the satellites to calculate time  | track the satellites to calculate range                               | determine position and assess the accuracy of that position     |
| 206. | In which frequency band are the L1 and L2 frequencies of GNSS?    | SHF   | VHF   | UHF   | EHF   |
| 207. | The visibility of GPS satellites is:                              | dependent on the location of the user   | greatest at the equator   | greatest at the poles   | the same at all points on and close to the surface of the earth |
| 208. | The required accuracy of a precision RNAV (P-RNAV) system is:     | 0.25 nm standard deviation or better  | 0.5 nm standard deviation or better   | 1 nm standard deviation or better                                     | 1.5 nm standard deviation or better                             |

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| 209. | The ETA generated by the FMS will be most accurate:   | when the forecast W/V equals the actual WN and the FMS calculated Mach No. equals the actual Mach No. | If the groundspeed and position are accurate.         | If the forecast WN at take-off is entered.                     | If the groundspeed is correct and the take-off time has been entered |
| 210. | The FMC position is:  | the average of the IRS positions  | the average of the IRS and radio navigation positions | computer generated from the IRS and radio navigation positions | computer generated from the radio navigation positions               |
| 211. | The inputs to the EHSI display during automatic flight include:                                 | auto-throttle, IRS and FMC  | FCC, FMC and ADC                                      | IRS, FMC and radio navigation facilities                       | IRS, ADC and FCC   |
| 212. | The phantom station in a 2D RNAV system may be generated by:                                    | VOR/DME   | Twin VOR  | Twin DME   | Any of the above   |
| 213. | The FMS database can be:  | altered by the pilots between the 28 day updates  | read and altered by the pilots                        | only read by the pilots  | altered by the pilots every 28 days                                  |
| 214. | When is the IRS position updated?   | continuously by the FMC   | at VOR beacons on route by the pilots                 | at significant waypoints only                                  | on the ground only   |
| 215. | Which of the following is independent of external inputs?                                       | INS   | Direct reading magnetic compass                       | VOR/DME  | ADF  |
| 216. | In an RNAV system which combination of external reference will give the most accurate position? | GPS/rho   | Rho/theta   | Rho/rho  | GPS/theta  |
| 217. | The NAVSTAR/GPS constellation comprises:  | 6 SVs each in 4 orbits  | 4 SVs each in 6 orbits                                | 8 SVs each in 3 orbits   | 3 SVs each in 8 orbits   |

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| 218. | The normal maximum range for an ATC surveillance radar is:  | 50 nm   | 150 nm  | 250 nm  | 350 nm  |
| 219. | The cause of a RNAV giving erratic readings would be:   | the aircraft is in the cone of confusion of the phantom station | the aircraft is beyond line of sight range of the phantom station         | the aircraft is beyond line of sight range of the reference station                   | the aircraft is outside the DOC of the reference station              |
| 220. | The height of the GPS constellation is:   | 19300 km  | 20200 km  | 10900 km  | 35800 km  |
| 221. | Which type of radar could give an indication of the shape and sometimes the type of the aircraft? | area surveillance radar   | SSR   | AWR   | Aerodrome surface movement radar                                      |
| 222. | What are the ground components of MLS?  | separate azimuth and elevation antennae with DME                | separate azimuth and elevation antennae with middle and outer markers     | combined azimuth and elevation antennae with DME                                      | combined azimuth and elevation antennae with middle and outer markers |
| 223. | The accuracy required of a basic area navigation (B-RNAV) system is:                              | +/-5 nm on 90% of occasions                                     | all the time  | +/-5 nm on 95% of occasions   | +/-5 nm on 75% of occasions   |
| 224. | The emissions from a non-directional beacon (NDB) are:  | a cardioid with a 30 Hz rotation rate                           | omni-directional  | a phase-compared signal   | a frequency modulated continuous wave (FMCW)                          |
| 225. | How does night effect affect ADF?   | Causes false bearings as the goniometer locks onto the skywave  | Skywave interference which affects the null and is worst at dawn and dusk | Interference from other NDB's which is worst at dusk and when due east of the station | Phase shift in the received signal giving random bearing errors       |
| 226. | What is an ADC input to the FMC?  | Heading   | VOR/DME position  | TAS   | Groundspeed and drift   |

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| 227. | The indications from a basic RNAV are behaving erratically. The reason is likely to be: | the aircraft is in the cone of confusion of the phantom station   | The aircraft is outside the DOC of the reference VOR/DME                                  | the aircraft is below line of sight range of the reference VOR/DME         | the aircraft is in the cone of confusion of the reference VOR                                       |
| 228. | In NAVSTAR/GPS the space segment:   | Provides the positional information to the receiver               | the receiver interrogates the satellite and the satellite provides positional information | sends information for receiver to determine latitude, longitude and time   | relays positional data from the control segment   |
| 229. | In a RNAV system the DME is tuned:  | by what is selected on the pilots DME and hence is tuned manually | automatically by taking pilot's DME selection   | by selecting DMEs to give suitable angle of cut to get a fix automatically | by automatically selecting the nearest suitable DME   |
| 230. | Which input to the FMC is taken from sources external to the aircraft?                  | INS   | pressure altitude   | magnetic heading from a direct reading compass                             | VOR/DME   |
| 231. | In NAVSTAR/GPS range measurement is achieved by measuring:                              | the time difference between the minimum number of satellites      | the time taken for the signal to travel from the satellite to the receiver                | the synchronisation of the satellite and receiver clocks                   | the time taken for a signal to travel from the receiver to the satellite and return to the receiver |
| 232. | Quadrantal error in the ADF is caused by:   | the metallic structure of the aircraft                            | generative voltages caused by the rotation of the engines                                 | the electrical wiring running through the aircraft                         | multipath reception   |
| 233. | Which of the following is true concerning the use of GNSS position in the FMC?          | it is used to verify and update the IRS position                  | an alternate source of position must be used and displayed                                | GNSS position is usable stand alone  | GNSS data may only be used in the absence of other positional information                           |
| 234. | The VDF term meaning 'true bearing from the station' is:                                | QDM   | QDR   | QTE  | QUJ   |

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| 235. | A class B VDF bearing will have an accuracy of:  | $\pm 2^\circ$  | $\pm 10^\circ$   | $\pm 1^\circ$   | $\pm 5^\circ$  |
| 236. | The Doppler effect is:   | the change in frequency caused by the movement of a transmitter and receiver | the change in frequency caused by the movement of a receiver | the change in frequency caused by the movement of a transmitter | the change in frequency caused by the relative movement between a transmitter and receiver |
| 237. | The accuracy of ADF may be affected by:  | night effect, tropospheric propagation, quadrantal error                     | static interference, siting errors, slant range              | angle of bank, mountain effect, station interference            | angle of bank, static from Cb, siting errors   |
| 238. | The ADF error which will cause the needle to 'hunt' (ie oscillate around the correct bearing) is:  | night effect   | Cb static  | station interference  | coastal refraction   |
| 239. | The accuracy of ADF by day and excluding compass error is:   | $\pm 1^\circ$  | $\pm 2^\circ$  | $\pm 5^\circ$   | $\pm 10^\circ$   |
| 240. | The principle of operation of VOR is:  | bearing by lobe comparison   | bearing by frequency comparison                              | bearing by searchlight principle                                | bearing by phase comparison  |
| 241. | The pilot of an aircraft flying at FL 240 is 250 nm from a VOR at 16 ftamsl which he selects. He receives no signal from the VOR. This is because: | the VOR is unserviceable   | the range of VOR is limited to 200 nm                        | the aircraft is beyond line of sight range                      | there are abnormal atmospheric conditions  |
| 242. | A category 2 ILS facility is required to provide guidance to:  | below 50 ft  | below 200 ft   | the surface   | below 100 ft   |

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| 243. | When flying downwind abeam the upwind end of the runway the indications from the ILS on the CDI will be:  | in the correct sense for the localiser and no glidepath signal | erratic on both localiser and glidepath    | erratic on the localiser and in the correct sense on the glidepath | no localiser signal and in the correct sense for glidepath |
| 244. | A full MLS system comprises a DME and:  | 4 elements multiplexing on 2 frequencies                       | 4 elements multiplexing on one frequency   | 2 elements using 2 frequencies                                     | 2 elements multiplexing on one frequency                   |
| 245. | The type of radar which has no minimum range restriction is:  | primary CW radar   | primary pulsed radar                       | secondary CW radar   | secondary pulsed radar                                     |
| 246. | The maximum theoretical range of aradar is determined by:   | power  | PW   | beamwidth  | PRF  |
| 247. | An advantage of a slotted antenna (planar array) over a parabolic reflector are:                          | side lobes removed   | 360° scan without any rotation requirement | less power required  | higher data rate possible                                  |
| 248. | The best resolution will be achieved on a radar display with:   | high power output and large parabolic reflector                | narrow beamwidth and narrow pulse width    | low frequency and small parabolic reflector                        | wide beamwidth and large pulsewidth                        |
| 249. | The AWR frequency is selected because it gives:   | good returns from water droplets                               | good returns from turbulence               | good penetration of cloud  | good returns from water vapour                             |
| 250. | On a colour AWR display, the heaviest precipitation will be displayed in:                                 | amber  | red  | yellow   | blue   |
| 251. | The altitude readout at the ground station from a mode C response will give the aircraft altitude within: | 300 ft   | 100 ft                                     | 500 ft   | 50 ft  |

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| 252. | The coverage of LORAN C is:   | in specified areas   | in oceanic areas   | over land only   | in oceanic areas in the northern hemisphere                                |
| 253. | The NAVSTAR/GPS operational constellation comprises:  | 21 satellites in 6 orbits                                    | 24 satellites in 6 orbits                                    | 24 satellites in 3 orbits  | 30 satellites in 6 orbits  |
| 254. | The model of the earth used for GPS is:   | WGS90  | PZ84   | PZ90   | WGS84  |
| 255. | The major limitation in the use of GPS for precision approaches using wide area augmentation systems (WAAS) is: | lack of failure warning                                      | the height difference between the ellipsoid and the earth    | global coverage of WARS is not available   | degradation of range measurement because of ionospheric propagation errors |
| 256. | The number of SV's required to produce a 3D fix is:   | 3  | 4  | 5  | 6  |
| 257. | The principle error in GNSS is:   | ionospheric propagation                                      | GDOP   | receiver clock error   | SV ephemeris error   |
| 258. | If the signal from a SV is lost during an aircraft manoeuvre:   | the receiver will select another SV with no loss in accuracy | the receiver will go into a DR mode with no loss of accuracy | the receiver will compensate by using the last calculated altitude to maintain positional accuracy | the receiver position will degrade regardless of the action taken          |
| 259. | The provision of RAIM requires a minimum of SVs.  | 3  | 4  | 5  | 6  |
| 260. | The best position on an aircraft for the GNSS aerial is:  | in the cockpit as close as possible to the receiver          | on the fuselage close to the centre of gravity               | on the aircraft as far as possible from other aerials to reduce reflections                        | close to each wing tip to compensate for manoeuvre errors                  |
| 261. | A 2D RNAV system takes fixing inputs  | co-located VOR/DME   | twin DME   | VOR and/or DME   | Any of the above   |

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|      | from:   |  |   |   |  |
| 262. | The accuracy required of a basic RNAV system is:                              | 5 nm   | 5°  | 1 nm  | 1°   |
| 263. | The most accurate external reference position will be provided by:            | VOR/DME  | Twin DME  | Twin VOR  | Suitable combination of VOR and DME                              |
| 264. | The accuracy required of a precision area navigation system is:               | 0.25 nm  | 2 nm  | 1 nm  | 0.5 nm   |
| 265. | A basic 2D RNAV system will determine tracking information from:              | twin DME   | VOR/DME   | Twin VOR  | Any of the above   |
| 266. | The IRS position can be updated:  | on the ground only                                     | at designated positions en-route and on the ground              | on the ground and overhead VOR/DME                                      | at selected waypoints and on the ground                          |
| 267. | Which positions can be input to the FMC using a maximum of 5 alpha- numerics? | SIDS & STARS, reporting points and airways designators | Navigation facilities, reporting points and airways designators | SIDS & STARS and latitude and longitude                                 | Latitude and longitude, reporting points and airways designators |
| 268. | The FMC navigational database can be accessed by the pilots:                  | to update the database                                 | to read information only  | to change information between the 28 day updates                        | to change the information to meet the sector requirements        |
| 269. | The period of validity of the navigational database is:                       | 28 days  | 1 month   | determined by the national authority and may be from 28 days to 91 days | 91 days  |
| 270. | A Graticule is the name given to:   | A series of lines drawn on a chart                     | A series of Latitude and Longitude lines drawn on a chart or    | A selection of small circles as you get nearer to either pole           | Both a & c are correct   |

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| 271. | A nautical mile is defined as:                                     | The length of the arc of a great circle which subtends an angle of one minute in the centre of the Earth. | The length of the arc of the Earth's equator which subtends an angle of one minute at the centre. | The length of 1/10,000th part of the average distance between the equator and either pole. | None of the above.   |
| 272. | Any Meridian Line is a:  | Rhumb Line  | Semi Great Circle   | Rhumb Line and a semi Great Circle   | All above are correct.   |
| 273. | A Rhumb Line cuts all meridians at the same angle. This gives:     | The shortest distance between two points.   | A line which could never be a great circle track  | A line of constant direction   | All above are correct.   |
| 274. | The shortest distance between to points on the Earth is along the: | Rhumb line  | Great circle  | Both of 'a' and 'b'  | None of 'a' and 'c'  |
| 275. | The sensitivity of a direct reading magnetic compass is:           | Inversely proportional to the horizontal component of the earth's magnetic field.                         | Proportional to the horizontal component of the earth's magnetic field.                           | Inversely proportional to the vertical component of the earth's magnetic field.            | Inversely proportional to the vertical and horizontal components of the earth's magnetic field |
| 276. | What is the definition of magnetic variation?                      | The angle between the direction indicated by a compass and Magnetic North.                                | The angle between True North and Compass North.   | The angle between Magnetic North and True North.   | The angle between Magnetic Heading and Magnetic North.   |
| 277. | Where is a compass most effective?                                 | About midway between the earth's magnetic poles   | In the region of the magnetic South pole  | In the region of the magnetic North pole   | On the geographic equator  |
| 278. | The value of variation:  | is zero at the magnetic equator   | has a maximum value of 180°   | has a maximum value of 45° E or 45° W  | cannot exceed 90°  |

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| 279. | The agonic line:   | is midway between the magnetic North and South poles | follows the geographic equator | is the shorter distance between the respective True and Magnetic North and South poles | Follows separate paths out of the North polar regions, one currently running through Western Europe and the other through the USA |
| 280. | What is the maximum possible value of Dip Angle?   | 66°  | 180°                           | 90°  | 45°   |
| 281. | The formula used for calculation of departure:   | Ch long (degree) X cos mean lat                      | Ch. long (mins) X cos mean lat | Ch. long (degree) X sin mean lat   | Ch long (mins) X sin mean lat   |
| 282. | A direct Mercator graticule is:  | Rectangular  | Square                         | Circular   | Convergent  |
| 283. | On a normal Mercator chart, rhumb lines are represented as:  | Curves concave to the Equator                        | Curves convex to the Equator   | Complex curves   | Straight lines  |
| 284. | On a direct Mercator, Great Circles can be represented as:   | Straight lines                                       | Curves                         | Straight lines and curves  | all of the above  |
| 285. | On a direct Mercator, with the exception of the meridians and the Equator, Great Circles are represented as: | Curves concave to the Nearer Pole                    | Curves convex to the Equator   | Curves concave to the Equator  | Straight lines  |
| 286. | The angle between a straight line on a Mercator chart and the corresponding great circle is:                 | Zero   | Earth convergency              | Conversion Angle   | Chart Convergence   |
| 287. | On a Gnomonic Projection the Great circles are:  | Concave to the nearer pole                           | Converse to the nearer pole    | Straight lines   | None of the above.  |

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| 288. | On a normal Mercator Projection the correct statement is:                           | The projection is not conformal          | It is not equal area projection           | It is perspective                                       | A great circle is always represented by a straight line. |
| 289. | Scale on a Lambert's conformal conic chart  | is constant                              | is constant along a meridian of longitude | varies slightly as a function of latitude and longitude | is constant along a parallel of latitude                 |
| 290. | Scale on a Lambert conformal chart is:  | constant along a line of latitude        | constant along a line of longitude        | constant everywhere                                     | correct at the parallel of origin                        |
| 291. | A polar chart is the best between 90° and 74° and it is made by:                    | Gnomonic projection                      | Stereographic projection                  | Both of the above                                       | None of the above.                                       |
| 292. | An ICAO nautical mile is defined as?  | 6080 feet                                | 1852 metres                               | 1863 feet   | 6062 feet  |
| 293. | How much is the polar diameter of the Earth different from the equatorial diameter? | less by 40 km                            | greater by 27 statute miles               | less by 27 statute miles                                | greater by 27 nautical miles                             |
| 294. | The maximum difference between geodetic and geocentric latitude occurs at about?    | 45° North and South                      | 90° North and South                       | 60° North and South                                     | 0° (Equator)   |
| 295. | The circumference of the Earth is approximately?                                    | 43200 nm                                 | 10800 nm                                  | 21600 nm  | 5400 nm  |
| 296. | At a specific location, the value of magnetic variation                             | depends on the value of magnetic heading | depends on the value of true heading      | varies slowly over time                                 | depends on the type of compass installed                 |
| 297. | At the magnetic equator   | Dip is zero                              | Variation is zero                         | Deviation is zero                                       | The isogonals are agonic lines                           |
| 298. | You are flying at FL330 at Mach No 0.9M. Ambient temperature is ISA                 | 600 knots                                | 595 knots                                 | 540 knots   | 505 knots  |

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|      | +15°. What is your TAS?  |   |                                    |   |  |
| 299. | An aircraft is maintaining a 5.2% gradient on a flat terrain. Its height at 7 nm from the runway is approximately? | 3640 feet   | 1890 feet                          | 2210 feet   | 680 feet                                     |
| 300. | G/S = 240 knots, Distance to go = 500 nm. What is time to go?  | 20 minutes  | 29 minutes                         | 2h 05 m   | 2h 12 m                                      |
| 301. | An aircraft is climbing at a constant CAS in ISA conditions. What will be the effect on TAS and Mach No?           | TAS increases and Mach No decreases                             | Both increase                      | Both decrease   | TAS decreases and Mach No increases          |
| 302. | By what amount must you change your rate of descent given a 10 knot increase in headwind on a 3° glideslope ?      | 50 feet per minute increase                                     | 30 feet per minute increase        | 50 feet per minute decrease   | 30 feet per minute decrease                  |
| 303. | A non-perspective chart:   | is produced directly from a light projection of a Reduced Earth | cannot be used for navigation      | is produced by mathematically adjusting a light projection of the Reduced Earth | is used for a Polar Stereographic projection |
| 304. | On a Mercator chart, a Rhumb Line appears as a:  | small circle concave to the nearer pole                         | curve convex to the nearer pole    | complex curve   | straight line                                |
| 305. | Mercator charts use for what Projections?  | cylindrical   | conical                            | plane/azimuthal   | complex                                      |
| 306. | Convergence on a Transverse Mercator   | the datum meridian only   | the datum meridian and the Equator | the Equator and the Poles   | the Parallel of Origin                       |

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|      | chart is correct at:  |  |  |  |   |
| 307. | What is the main use of an Oblique Mercator chart?  | flying a specified Great Circle route                        | flying an equatorial route   | mapping countries with a large N/S extent but a lesser E/W extent                        | mapping countries with a large E/W extent but a lesser N/S extent |
| 308. | When does perihelion occur?   | early January  | mid March  | early July   | 42634   |
| 309. | When does aphelion occur?   | early January  | mid March  | early July   | 42634   |
| 310. | When do `equinoxes' occur?  | December and June  | February and November  | March and September  | January and July  |
| 311. | When it is the Winter Solstice in the Southern Hemisphere, the sun will be overhead                 | the Arctic Circle  | the Tropic of Capricorn  | the equator  | the Tropic of Cancer  |
| 312. | A sidereal day is?  | longer than an apparent solar day                            | longer than a real solar day   | shorter than an apparent solar day   | equal to a real solar day   |
| 313. | The maximum difference between Mean Time and Apparent Time is:                                      | 21 minutes   | 16 minutes   | 30 minutes   | there is no difference  |
| 314. | What is the length of a Sidereal Year?  | 365 days   | 366 days   | 365 days 6 hrs   | 365 days 5 hrs 48.75 minutes                                      |
| 315. | The Hour Angle (Greenwich Hour Angle) of a celestial body is analogous/equivalent on the Earth to ? | latitude   | longitude  | co-latitude  | UTC   |
| 316. | The definition of Local Mean Time (LMT) is:   | time based upon the average movement of the Earth around the | when the Mean Sun is transitting (crossing) your meridian, it is 1200 hrs LMT. | when the Mean Sun is transitting (crossing) your anti-meridian, it is 0000 hrs LMT (2400 | all of the above.   |

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|      |   | Sun.  |  | hrs LMT, previous day).   |  |
| 317. | Local Mean Time (LMT) always changes by a day when crossing ?                             | the Greenwich Meridian  | 180°E/W  | the International Date Line   | the Equator  |
| 318. | Zone Time (ZT) is used?   | by aircraft on trans-oceanic routes                                   | as legal time in all countries   | by ships at sea   | in polar regions   |
| 319. | Civil Twilight is?  | the period between sunset and the end of Evening Civil Twilight (ECT) | the period between the start of Morning Civil Twilight (MCT) and sunrise                     | related to the position of the centre of the sun being 6° below the sensible horizon          | all of the above   |
| 320. | In a standby direct reading compass there is:   | a non-pendulously mounted magnet system.                              | a single pendulously mounted bar magnet.   | a circular magnet or pair of bar magnets pendulously mounted.                                 | a low magnetic moment system, either of circular or bar configuration. |
| 321. | The main requirements of a direct reading magnetic compass are that it should be:         | horizontal, sensitive, periodic.                                      | easily read, floating in a transparent liquid, quick to react to change in aircraft heading. | positioned directly in front of the pilot, easily corrected for magnetic deviation, aperiodic | aperiodic, horizontal, sensitive.                                      |
| 322. | To improve the horizontality of a compass, the magnet assembly is suspended from a point: | on the centre line of the magnet.                                     | below the centre of gravity.   | above the centre of gravity.  | varying with magnetic latitude.  |
| 323. | When carrying out a turn at the magnetic equator there will be:                           | no turning error.   | a tendency to underread turns through south and overread turns through north.                | a tendency to underread turns due to liquid swirl.  | no turning error when turning through east or west only.               |
| 324. | What is the advantage of the remote   | It is lighter   | It is connected to a source of electrical  | It senses the earth's magnetic field rather   | It is not affected by aircraft deviation                               |

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|      | indicating compass (slaved gyro compass) over the direct reading magnetic compass?        |  | power and so is more accurate   | than seeks it, so is more sensitive   |   |
| 325. | IRS differs from INS in that it:  | Has a longer spin-up time and is not affected by vertical accelerations due to gravity.                    | Has a shorter spin-up time and suffers from laser lock.   | Does not need to correct for coriolis and central acceleration.   | Does not experience Schuler errors as accelerometers are strapped down and are not rotated by a V/Rfeedback loop. |
| 326. | The period of validity of an FMS database is:   | 56 days  | One week  | 28 days   | Varies depending on the area of operational cover.  |
| 327. | In a ring laser gyro, the purpose of the dither motor is to:                              | Enhance the accuracy of the gyro at all rotational rates.  | Overcome laser lock.  | Compensate for transport wander.  | Stabilise the laser frequencies.  |
| 328. | What is the source of magnetic variation information in a Flight Management system (FMS)? | The main directional gyro which is coupled to the magnetic sensor (flux valve) positioned in the wing tip. | Magnetic variation information is stored in each IRS memory; it is applied to the true heading calculated by the respective IRS | Magnetic variation is calculated by each IRS based on the respective IRS position and the aircraft's magnetic heading | The FMS calculates MH and MT from the FMC position  |
| 329. | When and where are IRS positions updated?   | during all phases of flight  | only on the ground during the alignment procedure   | when the FMS is in IRS ONLY NAV operation   | when the VHF Nav Radios are selected to AUTO  |
| 330. | On a triple-fit IRS system, present positions on the CDU:                                 | will only differ if one IRS has been decoupled due to a detected malfunction                               | will only differ if an initial input error of aircraft position has been made   | are likely to differ as the information comes from different sources  | will not differ as the information is averaged  |
| 331. | Laser lock is overcome in an IRS system by  | shake  | SAGNAC  | dither  | vibration   |

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|      | using a piezo-electric motor which utilises the principle of   |   |  |  |  |
| 332. | The main reason that day and night, throughout the year, have different durations is due to the:   | earth's rotation                                | relative speed of the sun along the ecliptic         | inclination of the ecliptic to the equator                     | gravitational effect of the Sun and the Moon on the speed of rotation of the Earth |
| 333. | When is the last point at which an INS or IRS may be selected to NAV mode?   | After passengers and freight are aboard         | Immediately prior to push back or taxi from the gate | At the holding point   | On operation of the TOGA switch when opening the throttles for the take-off        |
| 334. | What does the sensor of an INS/IRS measure ?   | velocity  | displacement   | pressure   | acceleration   |
| 335. | The term drift refers to the wander of the axis of a gyro in?  | any plane                                       | the horizontal plane                                 | the vertical plane   | the vertical and horizontal plane  |
| 336. | Groundspeed is 540 knots. 72 ran to go. What is time to go?  | 8 mins  | 9 mins   | 18 mins  | 12 mins  |
| 337. | The data that needs to be inserted into an Inertial Reference System in order to enable the system to make a successful alignment for navigation is: | airport ICAO identifier                         | the position of an in-range DME                      | aircraft heading   | aircraft position in latitude and longitude  |
| 338. | A Rhumb line is:   | the vertex of a conformal polyformic projection | a straight line on a Lambert's conformal chart       | a line on the Earth which cuts all meridians at the same angle | the shortest distance between two points on the Earth's surface                    |

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| 339. | How long does alignment of an IRS (Laser Ring Gyros) normally take at mid-latitudes?        | 17 minutes   | 5 minutes   | 10 minutes   | 2 minutes   |
| 340. | What method of entering waypoints can be used on all INS equipments?                        | Distance and bearing   | Waypoint name   | Navaid identifier  | Latitude and longitude  |
| 341. | Alignment of INS and IRS equipments can take place in which of the following modes?         | ATT and ALIGN  | NAV and ALIGN   | ALIGN only   | ALIGN and ATT   |
| 342. | Which of the following equipments does not use information from external sources in flight? | INS / IRS  | pressure altimeter  | slaved gyro compass  | VOR   |
| 343. | An aircraft's compass must be swung:  | If the aircraft has been in the hangar for a long time and has been moved several times. | If the aircraft has been subjected to hammering.                      | Every maintenance inspection   | After a change of theatre of operations at the same magnetic latitude.    |
| 344. | Civil Twilight occurs between:  | Sunset and 6° below the horizon  | 6° and 12° below the horizon  | 12° and 18° below the horizon  | Sunrise and sunset  |
| 345. | What is the reason for seasonal changes in climate?   | Because the Earth's spin axis is inclined to the plane of its orbit round the Sun        | Because the distance between the Earth and the Sun varies over a year | Because the Earth's orbital speed round the Sun varies according to the time of the year | Because of the difference between the Tropical Year and the Calendar Year |
| 346. | What is the effect on the Mach number and TAS in an aircraft that is climbing with constant | Mach number decreases; TAS decreases   | Mach number increases; TAS remains constant                           | Mach number increases; TAS increases   | Mach number remains constant; TAS increases                               |

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|      | CAS?  |  |  |  |   |
| 347. | At what times of the year does the length of the hours of daylight change most rapidly?                                 | Spring Equinox and Autumn Equinox  | Summer Solstice and Winter Solstice  | Spring Equinox and Summer Solstice   | Autumn Equinox and Winter Solstice  |
| 348. | What is the definition of EAT?  | Estimated on-blocks arrival time   | Estimated time overhead the destination airfield   | Estimated initial approach fix time  | Estimated final approach fix time   |
| 349. | On a Transverse Mercator chart, scale is exactly correct along the?   | Equator, parallel of origin and prime vertical   | meridian of tangency   | datum meridian and meridian perpendicular to it.   | prime meridian and the equator.   |
| 350. | The purpose of the FMS is to:   | provide continuous automatic navigation, guidance, and performance management.   | provide continuous manual navigation, guidance, and performance management   | provide continuous manual navigation, guidance and automatic performance management  | provide continuous automatic navigation, guidance and manual performance management   |
| 351. | An aircraft on the Equator accelerates whilst traveling westwards. What will be the effect on a direct reading compass? | Indicates an increase in heading   | No change  | Indicates a decrease in heading  | Indicates an apparent turn to the North   |
| 352. | What is the duration of civil twilight?   | From the moment when the centre of the sun is on the sensible horizon until the centre reaches a depression angle of 6° from the | From the moment when the tip of the sun disappears below the sensible horizon until the centre reaches a depression angle of 6° from the sensible horizon. | From the moment when the centre of the sun is on the visual horizon until the centre reaches a depression angle of 6° from the sensible horizon. | From the moment when the tip of the sun disappears below the visual horizon until the centre reaches a depression angle of 6° from the sensible horizon |

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|      |  | sensible horizon.                             |  |  |   |
| 353. | Lines of latitude on a chart are always:   | Great Circles                                 | Small Circles except for the Equator                   | Vertices                                 | Meridians   |
| 354. | On which chart projection is it not possible to show the North Pole?                         | Direct Mercator                               | Lamberts   | Transverse Mercator                      | Polar Stereographic   |
| 355. | What is the meaning of the term 'standard time'?   | It is another term for UTC                    | It is the time zone system applicable only in the USA. | It is an expression for local mean time. | It is the time set by the legal authorities for a country or part of a country. |
| 356. | A compass swing is performed in order to correct for?  | acceleration                                  | deviation  | variation                                | aperiodicity  |
| 357. | The maximum difference between the geocentric and geodetic latitude occurs at about:         | 45° North and South                           | 90° North and South                                    | 60° North and South                      | 0° North and South  |
| 358. | The value of magnetic variation:   | has a maximum of 180°                         | varies between a maximum of 45°E and 45W               | must be 0° at the magnetic equator       | cannot exceed 90°   |
| 359. | On a Lambert Conformal Conic chart, earth convergence is most accurately represented at the: | north and south limits of the chart           | standard parallels                                     | Equator                                  | parallel of origin  |
| 360. | An Oblique Mercator projection is used specifically to produce:                              | radio navigation charts in equatorial regions | topographical maps of large east/west extent           | plotting charts in equatorial regions    | charts of the great circle route between two points                             |
| 361. | Given:<br>AD = Air distance<br>GD = Ground distance  | $GD = TAS / (GS \times AD)$                   | $GD = (AD \times GS) / TAS$                            | $GD = AD \times (GS - TAS) / GS$         | $GD = (AD - TAS) / TAS$   |

|      |  |  |   |   |                   |
|------|--|--|---|---|-------------------|
|      | TAS = True Airspeed GS = Groundspeed<br>Which of the following is the correct formula to calculate ground distance (GD) gone?  |  |   |   |                   |
| 362. | An aircraft is planned to fly from position A to position B, distance 480 nm, at an average groundspeed of 240 knots. It departs A at 1000 UTC. After flying 150 nm along track from A, the aircraft is 2 minutes behind the planned time. Using the actual groundspeed experienced, what is the revised ETA at B? | 1153                                       | 1203  | 1206  | 1157              |
| 363. | Scale on map or chart can be expressed by:   | The representative fraction                | The plain statement                         | The graduated scale                         | All the above     |
| 364. | Departure is the distance between two given meridians, measured along a stated parallel and is expressed in:   | Kilometer                                  | Nautical mile                               | Statute mile                                | None of the above |
| 365. | Earth convergence can be calculate by the formula:   | earth convergence = ch.long X sin mean lat | earth convergence = ch. long X cos mean lat | earth convergence = ch. long X sec mean lat | None of the above |