Systems Revision Questions

1. The principle of operation of firewire is:

a. positive coefficient of impedance, negative coefficient of inductance
b. positive coefficient of resistance, negative coefficient of capacitance
c. positive coefficient of inductance, negative coefficient of impedance
d. positive coefficient of capacitance, negative coefficient of resistance

2. What type of fire extinguisher would be used on a propane fire?

a. Foam
b. Water
c. Dry powder
d. Sand

3. On what principle do smoke detectors work?

a. Resistance and capacitance
b. Ionization and impedance
c. Optical and ionization
d. Inductance and light diffraction

4. An ion detector detects:

a. smoke and fire
b. smoke
c. overheat
d. light

5. If an artificial feel unit were fitted it would be connected:

a. in parallel with the primary controls
b. in series with the primary controls
c. in series with the secondary controls
d. in parallel with the secondary controls

6. In a twin jet fuel system what is the function of a feeder box?

a. To equally distribute the fuel to each tank during refuelling
b. To prevent pump cavitation
c. To feed fuel to the volumetric top-off unit
d. To control the amount of fuel remaining during fuel dumping

7. A twin jet aircraft would normally be refuelled by which of the following methods?

a. Overwing refuelling
b. Suction refuelling
c. Open line refuelling
d. Pressure refuelling

8. The fuel tanks of a modern passenger airliner are filled by:

a. gravity
b. fuel is sucked in by the aircraft pumps
c. fuel is pumped in by the fuel truck
d. the VTO system

9. The purpose of a refuelling volumetric top off unit (VTO) is:

a. to keep the feeder box full of fuel at all times
b. to close the fuelling valve when the tank is full
c. to close the surge check valves in the outboard tanks to keep the tank full until the centre tank fuel has been used
d. to close the tank vent system when the tank is full

10. Fuel tank booster pumps are:

a. spur gear pumps – high pressure
b. centrifugal pumps – high pressure
c. spur gear pumps – low pressure
d. centrifugal pumps – Low pressure

11. The advantage of a float type fuel gauging system is:

1. simple
2. compensates for variations of SG
3. reads fuel quantity by mass
4. compensates for change of aircraft attitude

a. 3 & 4
b. 2 & 3
c. 1 only
d. 1 & 3

12. The function of the baffles in a fuel tank is:

a. to prevent movement of fuel to the wingtip
b. to prevent fuel surge (or sloshing) during manoeuvring
c. to prevent pump cavitation
d. to reduce fuel flow at altitude

13. The function of baffle check valves in a fuel tank is:

a. to reduce fuel flow at altitude
b. to prevent fuel surge during manoeuvring
c. to prevent pump cavitation
d. to prevent movement of fuel to the wingtip

14. A magneto is switched off by:

a. open circuiting the primary circuit
b. grounding the secondary circuit
c. open circuiting the secondary circuit
d. grounding the primary circuit

15. An impulse coupling in a magneto is provided to:

a. generate high voltage and advance the spark for starting
b. increase the energy to the spark plug as the rpm increases
c. generate high voltage and retard the spark for starting
d. allows a low energy value when 'continuous ignition' is selected

16. A turbosupercharger impeller is driven by:

a. a connection through a gearbox connected to the crankshaft
b. diversion of exhaust gases by the wastegate using energy that would otherwise have been wasted
c. excess torque from the reduction gearbox
d. a ram air turbine

17. A cylinder head temperature gauge measures:

a. the temperature of the hottest cylinder
b. the temperature of all the cylinders and gives an average reading
c. the temperature of the coolest cylinder
d. the temperature of the two cylinders furthest away from each other divided by two

18. EPR is measured by the ratio of:

a. turbine pressure to combustion chamber inlet pressure
b. high pressure compressor inlet pressure to exhaust pressure
c. low pressure compressor inlet pressure to high pressure compressor outlet pressure
d. exhaust pressure to low pressure compressor inlet pressure

19. Where is EGT measured?

a. In the jet pipe
b. HP turbine outlet
c. HP compressor outlet
d. Combustion chamber

20. In a bootstrap air conditioning system what is the first thing the air does?

a. Goes through the primary heat exchanger, compressor then secondary heat exchanger
b. Goes through the compressor, turbine, secondary heat exchanger
c. Goes through the turbine, compressor and secondary heat exchanger
d. Goes through the compressor, secondary heat exchanger, turbine

21. How are the loads on an aircraft busbar connected?

a. They are in series so that current reduces through the busbar as loads are switched off
b. They are in parallel so that voltage reduces through the busbar as loads are switched off
c. They are in parallel so that current reduces through the busbar as loads are switched off
d. They are in series so that voltage reduces through the busbar as loads are switched off

22. In a modern airliner what is the hydraulic fluid used?

a. Synthetic
b. Mineral
c. Mineral/alcohol
d. Vegetable

23. The correct extinguisher to use on a brake fire would be:

a. foam
b. dry powder
c. CO_2
d. water

24. An aircraft is certified to fly higher than 25 000 ft and to carry a maximum of 240 passengers, it is configured to carry 200 and actually has 180 passengers on board. The minimum number of drop-down oxygen masks provided must be:

a. 180
b. 200
c. 220
d. 240

25. The passenger oxygen drop-down mask stowage doors are released:

a. by a lanyard operated by a barometric capsule
b. mechanically
c. electrically for chemical oxygen generators and pneumatically for gaseous system
d. manually by the cabin crew

26. In a centrifugal compressor:

a. the air enters the eye tangentially and leaves the periphery axially
b. the air enters the periphery axially and leaves the eye tangentially
c. the air enters the eye radially and leaves the tip tangentially
d. the air enters the impeller axially at the eye and leaves at the periphery tangentially

27. What happens to pressure, temperature and velocity of the air in the diffuser of a centrifugal compressor?

a. Velocity increase, pressure and temperature decrease
b. Velocity decrease, pressure and temperature increase
c. Velocity, pressure and temperature increase
d. Velocity, pressure and temperature decrease

28. The type of smoke detection system fitted to aircraft is:

a. optical and ionization
b. chemical
c. electrical
d. magnetic

29. The flight deck warning on activation of an engine fire detection system is:

a. warning bell
b. gear warning
c. warning light and warning bell
d. warning light

30. Hydraulic reservoirs are pressurized by:

a. ram air in flight only
b. separate helium gas system
c. air from the air conditioning system
d. engine bleed air from turbine engine

31. The purpose of a hydraulic fuse is to:

a. allow the parking brake to remain on overnight if required
b. allow a reduced pressure to the wheel brake system to avoid locking the wheels
c. prevent over-pressurizing the reservoir as altitude increases
d. prevent loss of system fluid if the pipeline to a brake unit should rupture

32. A shuttle valve will:

a. allow the accumulator to be emptied after engine shutdown
b. reduce pump loading when normal system pressure is reached
c. automatically switch to a more appropriate source of hydraulic supply
d. operate on a rising pressure, higher than the Full Flow relief valve

33. With regard to an air cycle type ECS pack, where is the water separator fitted?

a. After the humidifier
b. Before the cold air unit compressor
c. Between the compressor and turbine
d. After the cold air unit turbine

34. In the event that an emergency decent causes the cabin pressure to decrease below ambient pressure:

a. the outward relief valve will open
b. the outflow valve will close
c. the inward relief valve will open
d. the safety valve will close

35. The purpose of a ditching control valve is:

a. to close the outflow valves
b. to open outflow valves
c. to allow rapid depressurisation
d. to dump the toilet water after landing

36. In a bleed air anti-icing system the areas that are heated are:

a. the whole of the wing
b. wing leading edge slats and flaps
c. wing leading edges and slats
d. trailing edge flaps

37. On a modern turboprop aircraft the method of anti-icing/de-icing the wings is:

a. fluid
b. pneumatic boots
c. electrical heater mats
d. hot air bled from the engines

38. If an aircraft maximum operating altitude is limited by the pressure cabin, this limit is due to:

a. the maximum positive pressure differential at maximum operating ceiling
b. the maximum positive pressure differential at maximum cabin altitude
c. the maximum number of pressurization cycles
d. the maximum zero fuel mass at maximum pressure altitude

39. Long haul aircraft are not used as short haul aircraft because:

a. checklists would be too time consuming to complete
b. it would use too much fuel
c. some tanks will be empty the whole time imposing too much strain on the aircraft
d. structures are given fatigue lives based on their use

40. The properties of Duralumin are:

1. aluminium/copper base
2. aluminium/magnesium base
3. hard to weld
4. easy to weld
5. good thermal conductivity
6. poor resistance to air corrosion

a. 1, 3 and 5
b. 2, 3 and 5
c. 1, 2 and 3
d. 4, 5 and 6

41. An undercarriage leg is considered to be locked when:

a. it is down
b. the amber light is on
c. mechanically locked by an 'over-centre' mechanism
d. the actuating cylinder is at the end of its travel

42. An underinflated tyre on a dry runway:

a. increases wear on the shoulder
b. increases wear on the crown
c. increases viscous aquaplaning speed
d. will cause the tyre temperature to reduce

43. Kreuger flaps are positioned:

a. towards the wing tip
b. at the wing inner leading edge
c. along the whole leading edge
d. at the wing trailing edge

44. What are flaperons?

a. Combined spoiler and flap
b. Combined elevators and flaps
c. Combined ailerons and elevators
d. Combined flap and ailerons

45. What is the purpose of inboard ailerons:?

a. To reduce wing bending at high speed
b. To reduce wing twisting at low speed
c. To reduce wing bending at low speed
d. To reduce wing twist at high speed

46. What is the purpose of trim tabs?

a. To reduce stick forces in manoeuvres
b. To reduce stick holding forces to zero
c. To increase control effectiveness
d. To reduce control effectiveness

47. Smoke hoods protect:

a. full face and provide a continuous flow of oxygen
b. mouth and nose and provide a continuous flow of oxygen
c. full face and provide oxygen on demand
d. mouth and nose and provide oxygen on demand

48. Oxygen supplied to the flight deck is:

a. gaseous, diluted with ambient air if required
b. chemically generated and diluted with cabin air if required
c. gaseous, diluted with cabin air if required
d. chemically generated, diluted with ambient air if required

49. If during pressurized flight the outflow valve closes fully due to a fault in the pressure controller the:

a. skin will be overstressed and could rupture
b. safety valve opens when the differential pressure reaches structural max diff
c. the inward relief valve will open to prevent excessive negative differential
d. ECS packs are automatically closed down

50. In a fan jet engine the bypass ratio is:

a. internal mass airflow divided by external mass airflow
b. external mass airflow divided by internal mass airflow
c. internal mass airflow divided by mass fuel flow
d. mass fuel flow divided by mass fuel flow

51. The thrust reverser light illuminates on the flight deck annunciator when the:

a. thrust reverser doors have moved to the reverse thrust position
b. thrust reverser doors have been selected but the doors have not moved
c. thrust reverser doors are locked
d. thrust reverser doors are unlocked

52. In very cold weather the pilot notices slightly higher than normal oil pressure on start up. This:

a. indicates an oil change is required.
b. is indicative of a blocked oil filter.
c. is acceptable providing it returns to normal after start up.
d. is abnormal but does not require the engine to be shut down.

53. If a fuel tank having a capacitive contents gauging system is empty of fuel but has a quantity of water in it:

a. the gauge will show full scale high
b. the gauge will show the mass of the water
c. the gauge will show empty
d. the gauge needle will 'freeze'

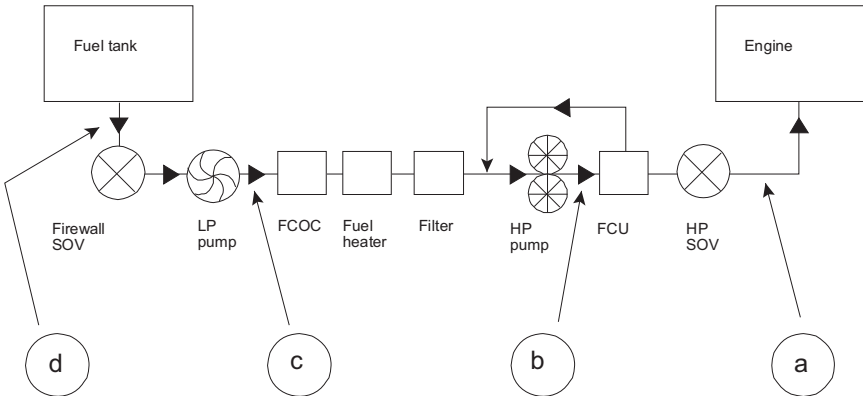
54. In a four stroke engine, when the piston is at BDC at the end of the power stroke the position of the valves is:

	Inlet	Exhaust
a.	closed	closed
b.	open	open
c.	open	closed
d.	closed	open

55. What is the effect on EGT and EPR if a bleed valve is opened?

a. Increase, increase
b. Decrease, decrease
c. Decrease, increase
d. Increase, decrease

56. Refer to the following diagram for a modern turbofan engine – where is fuel flow measured?



57. Where is torque measured in a turboprop engine?

a. Accessory gearbox
b. Reduction gearbox
c. At the turbine
d. At the constant speed unit oil pump

58. Propeller blade angle is:

a. the angle between the blade chord and the plane of rotation
b. the angle between the relative airflow and the chord
c. dependent upon rpm and TAS
d. the difference between effective pitch and geometric pitch

59. Why is a propeller blade twisted?

a. To reduce the thrust at the root of the blade
b. To prevent the blade from fully feathering
c. To reduce the tip speed
d. To even out the thrust force along the length of the blade

60. For calculating resistances in parallel the formula is:

a. $\frac{1}{R_T} = \frac{1}{R_1} \times \frac{1}{R_2} \times \frac{1}{R_3}$

b. $R_T = R_1 + R_2 + R_3$
c. $R_T = R_1 \times R_2 \times R_3$
d. $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

61. When a fuse operates it is ..... and when a circuit breaker operates it is .....

a.	high current	low current
b.	low current	high current
c.	non re-settable	re-settable
d.	re-settable	non re-settable

62. A hot busbar is one that:

a. supplies galley power
b. is permanently connected to the battery
c. carries all of the non-essential loads
d. is connected to the battery in an emergency

63. In an AC distribution system what is the purpose of the GCB?

a. Maintains constant frequency
b. Connects the load busbar to the synchronizing busbar
c. Controls generator field excitation
d. Connects a generator output to its load busbar

64. An aircraft which uses DC as the primary source of power, AC for the instruments may be obtained from:

a. CSDU
b. rectifier
c. inverter
d. TRU

65. Persistent over excitation of one generator field will cause:

a. the GCB and BTB to trip
b. the BTB and exciter control relay to trip
c. the GCB and exciter control relay to trip
d. the GCB and SSB to trip

66. When a battery is nearly discharged, the:

a. voltage decreases
b. voltage and current decrease
c. current increases because voltage has dropped
d. electrolyte boils

67. The state of charge of an aircraft battery on an aircraft with a voltmeter would be checked:

a. on load
b. off load
c. with the battery negative terminal disconnected
d. by monitoring the electrolyte resistance

68. In a paralleled AC distribution system what regulates the real load?

a. Torque from the CSDU (CSD)
b. Field excitation from the voltage regulator
c. Synchronizing circuits in the BTB
d. A potentiometer on the flight engineer's panel

69. If the oil temperature gauge of the CSD is in the red what would action is required?

a. Throttle back and allow to cool down
b. Auto disconnect
c. Manually disconnect and reconnect on the ground
d. Disconnect, then when cooled reconnect

70. What is a transistorized static inverter in a DC circuit used for?

a. Convert AC to DC
b. Provide field excitation current
c. Provide AC for instruments
d. To supply power to the emergency lights

71. If the load increases on a 'constant speed AC generator' what does the voltage regulator do?

a. Increases generator speed
b. Decreases field excitation
c. Remains the same
d. Increases field excitation

72. Incorrect bonding of the aircraft structure could cause:

a. corrosion at skin joints
b. CB trips
c. static on the radio
d. VOR interference

73. The characteristics of a Unipole system are:

1. Lighter
2. Easier fault finding
3. More likely to short circuit
4. Less likely to short circuit
5. It is not a single wire system

a. 2, 4 and 5.
b. 1, 2 and 3.
c. 2, 4 and 1.
d. 1, 4 and 5.

74. The frequency of an AC generator is dependent upon?

a. the rpm of the rotor
b. the number of poles in the rotor
c. the rpm and number of poles in the rotor
d. the number of poles in the rotor and the number of phase windings in the stator

75. With an almost discharged battery there will be:

a. a decrease of voltage with increasing load
b. increase of current with decrease of voltage
c. decrease of current with increasing load
d. increase of voltage with increasing load

76. When is an engine overheat firewire system activated:

a. When an overheat is detected all along the length of both firewire loops
b. When an overheat affects one detector loop at a point anywhere along its length
c. When an overheat is detected all along the length of one firewire loop
d. When an overheat affects both detector loops at a point anywhere along their length

77. In an air cycle air conditioning system what is the function of the ground-cooling fan?

a. To re-circulate air through the mix manifold
b. To draw cooling air over the turbine
c. To blow air into the compressor
d. To draw cooling air over the heat exchangers

78. How do you control power in a jet engine?

a. By controlling the mixture ratio
b. By controlling the fuel flow
c. By controlling the airflow
d. By controlling the bleed valves

79. In a normally aspirated piston engine carburettor icing can occur:

a. between 0°C and –10°C
b. at more than +10°C
c. only at less than +10°C if there is visible moisture
d. only above 5000 ft

80. In a gas turbine engine fuel system why is the fuel heater before the filter?

a. To prevent 'waxing'
b. To help vaporization of the fuel
c. To prevent water in the fuel freezing and blocking the filter
d. To prevent the fuel from freezing and blocking the filter

81. What is the purpose of the FCOC (Fuel-cooled Oil Cooler)?

a. To maintain the oil at the correct temperature
b. To heat the fuel and cool the oil
c. To heat the oil and cool the fuel
d. To bypass oil to the engine if the oil pressure filter becomes blocked

82. What is the purpose of the torque links in a landing gear leg?

a. To prevent the wheel rotating around the leg
b. To prevent shimmy
c. To transfer the brake torque to the wheel
d. To position the wheels in the correct attitude prior to landing

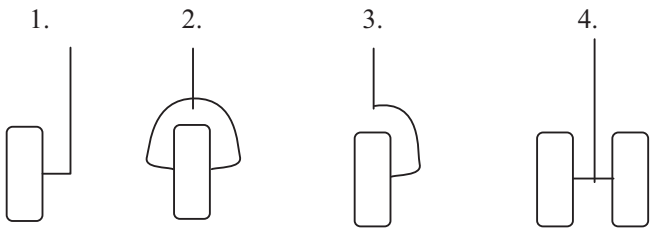
83. An artificial feel system is needed in the pitch channel if the:

a. airplane has a variable incidence tailplane
b. elevators are controlled through a reversible servo system
c. elevator is controlled through a servo tab
d. elevators are controlled through an irreversible servo system

84. Auto brakes are disengaged:

a. when the ground spoilers are retracted
b. when the speed falls below 20 kt
c. on the landing roll when the autopilot is disengaged
d. by the pilot

85. In the following diagram the landing gear arrangements shown are:



	1.	2.	3.	4.
a.	fork	cantilever	levered	tandem
b.	cantilever	dual	fork	tandem
c.	cantilever	fork	half fork	dual wheel
d.	half fork	dual wheel	cantilever	fork

86. In an aircraft with a fuel dumping system it will allow fuel to be dumped:

a. down to a predetermined safe value
b. down to unuseable value
c. to leave 15 gallons in each tank
d. down to maximum landing weight

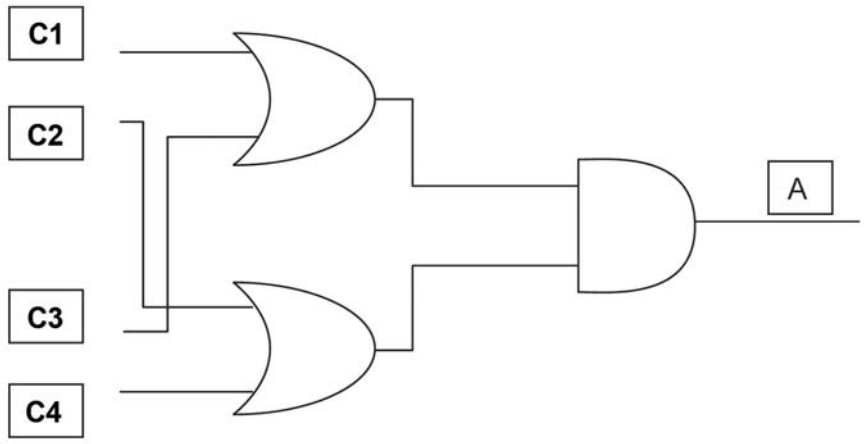
87. What does 'octane rating' when applied to AVGAS refer to?

a. The waxing point of the fuel
b. The ability of the fuel to disperse water
c. The anti-knock value of the fuel
d. The volatility of the fuel

88. How are modern passenger jet aircraft fuel tanks pressurized?

a. By nitrogen from a storage cylinder
b. By ram air through the vent system
c. By bleed air from the pneumatic system
d. By a volumetric top off unit

89. Refering to the following diagram:



To get logic 1 output at A there must be a logic 1 input at:

a. C1 and C2 only
b. C1 and C3 only
c. C2 and C4 only
d. C3 only

90. In which of the following areas would an overheat/fire warning be provided?

a. Fuel tank
b. Cabin
c. Tyres
d. Wheel/undercarriage bay

91. An axial flow compressor when compared to a centrifugal compressor:

a. takes in less air and is less prone to rupturing
b. takes in more air and is more prone to rupturing
c. takes in more air and is less prone to rupturing
d. takes in less air and is more prone to rupturing

92. Hydraulic pressure typically used in the system of large transport aircraft is:

a. 2000 - 3000 psi
b. 3000 - 4000 psi
c. 1000 - 2000 psi
d. 4000 - 5000 psi

93. The EGT indication on a piston engine is used:

a. to control the cooling air shutters
b. to monitor the oil temperature
c. to assist the pilot to adjust the fuel mixture
d. to indicate cylinder head temperature

94. A gas turbine engine having a single spool, the compressor will rotate:

a. at the same speed as the turbine
b. slower than the turbine
c. faster than the turbine
d. independently of the turbine

95. Because of its function an 'AND' gate may also be referred to as:

a. invert or not gate
b. any or all gate
c. all or nothing gate.
d. either or gate.

96. What type of hydraulic fluid is used in a modern passenger jet aircraft?

a. Mineral based
b. Phosphate ester based
c. Vegetable based
d. Water based

97. In a 4 stroke engine when does ignition occur in each cylinder?

a. After TDC for starting and then before TDC every 2nd rotation of the crankshaft
b. Before TDC for starting and then after TDC every 2nd rotation of the crankshaft
c. After TDC for starting and then before TDC every rotation of the crankshaft
d. Before TDC for starting and then after TDC every rotation of the crankshaft

98. When smoke appears in the cockpit, after donning the oxygen mask the pilot should select:

a. normal
b. 100%.
c. diluter
d. emergency

99. Which part of the gas turbine engine limits the temperature?

a. Combustion chamber
b. Turbine
c. Compressor
d. Exhaust

100. What makes the non-rigid fittings of compressor and turbine blades rigid when the engine is running?

a. Spring locks
b. Thrust and drag forces
c. Aerodynamic and centrifugal force
d. Tapered bead seats

101. What ice protection system is used on most modern jet transport aircraft?

a. Liquid
b. Electrical
c. Hot air
d. Pressure operated boots

102. What frequency is commonly used in aircraft electrical distribution systems?

a. 200 Hz
b. 400 Hz
c. 100 Hz
d. 50 H

103. When does the engine High Pressure fuel shut off valve close?

a. After a booster pump failure
b. When the engine fuel switch is selected 'on' during engine start
c. When flight idle is selected
d. When the engine fuel switch is selected 'off' during engine shutdown

104. When does the Low Pressure fuel shut off valve close?

a. When the fire handle is pulled
b. When the engine fuel switch is selected 'on' during engine start
c. When flight idle is selected
d. After a booster pump failure

105. What voltage is supplied to booster pumps on a modern jet airliner?

a. 115 V AC single phase
b. 200 V AC three phase
c. 28 V DC from an inverter
d. 12 V DC from the battery

106. An engine having a 'free turbine':

a. there is a mechanical connection between the power output shaft and the free turbine
b. there is no mechanical connection between the power output shaft and the free turbine
c. there is a mechanical connection between the compressor and the propeller shaft
d. air enters via compressor inlet on the turbine

107. If the pressure controller malfunctions during the cruise and the outflow valve opens what happens to:

i) cabin ROC ii) cabin Alt iii) differential pressure

a. i) increase ii) decrease iii) decrease
b. i) decrease ii) increase iii) decrease
c. i) increase ii) increase iii) decrease
d. i) increase ii) increase iii) increase

108. What controls cabin pressurization?

a. ECS pack mass flow controller
b. outflow valve
c. engine bleed valve
d. inflow valve

109. If the fire handle is pulled in an aeroplane with an AC generator system what disconnects?

a. Exciter control relay and GCB
b. GCB and BTB
c. BTB and GCU
d. Exciter control relay only

110. Which components constitute a crank assembly?

a. crankshaft, camshaft, valve springs
b. crankcase, crankshaft, pistons and connecting rods
c. crankshaft, pistons and connecting rods
d. propeller, crankshaft, connecting rods

111. One stage of an axial compressor:

a. Comprises a row of stators followed by a rotor disc
b. Has a compression ratio of 2:1
c. Comprises a rotor disc followed by a row of stators
d. Has a compression ratio of 0.8

112. If a CSD overheat warning is shown:

a. the CSD can be disconnected and the pilot must control the alternator himself
b. the pilot must throttle back to reduce the load on the alternator
c. the CSD can be disconnected then reconnected later when the temperature has reduced
d. the CSD can be disconnected but not used for the rest of the flight

113. A new tyre with wear on the tread and parallel grooves:

a. can be repaired once only
b. can be repaired several times
c. can never be repaired
d. is fit for use only on a nose-wheel

114. An emergency exit assisted escape device must be fitted if the door sill height is above:

a. 8 ft with the aircraft on the landing gear with the nosewheel extended
b. 8 ft with the aircraft on the landing gear with the nosewheel collapsed
c. 6 ft with the aircraft on the landing gear with the nosewheel extended
d. 6 ft with the aircraft on the landing gear with the nosewheel collapsed

115. In a compensated capacitance fuel contents system what happens to a fuel weight of 8000 lb if its volume increases by 5%?

a. Decreases by 5%
b. Increases by 5%
c. Remains the same
d. Increases by 5% for every degree rise in temperature

116. How do aircraft spoilers work?

a. Lower surfaces only, symmetrical and asymmetrical operation
b. Lower surfaces only, symmetrical operation
c. Upper surfaces only, symmetrical and asymmetrical operation
d. Upper surfaces only, symmetrical operation

117. What is the total volume in the cylinder of a four stroke engine?

a. A value equal to the cubic capacity
b. Swept volume minus clearance volume
c. Volume between TDC and BDC
d. Swept volume plus clearance volume

118. After the power stroke on a piston engine the poppet valve sequence is:

a. exhaust valve opens, inlet valve opens, exhaust valve closes
b. exhaust valve closes, inlet valve opens, exhaust valve opens
c. inlet valve opens, exhaust valve closes, inlet valve closes
d. inlet valve closes, exhaust valve closes, inlet valve opens

119. What speed does the LP compressor run at?

a. The speed of the LP turbine
b. The speed of the HP turbine
c. Half the engine speed
d. Constant speed

120. What happens to the angle of attack of a fixed pitch propeller as the aircraft accelerates down the runway?

a. Increases
b. Decreases
c. Remains the same
d. Blade angle changes to compensate for forward speed

121. What happens to the AoA of a VP propeller with increasing TAS if the rpm and throttle levers are not moved?

a. Blade angle remains constant to compensate for forward speed
b. Increases
c. Decreases
d. Remains the same

122. Where are smoke detectors fitted?

a. Toilets
b. Toilets and cargo compartments A, B, C, D, E
c. All cargo compartments
d. Toilets and cargo compartments B, C, E

123. What colour is the hydraulic liquid in a modern jet airliner?

a. Purple
b. Red
c. Yellow
d. Pink

124. On what principle does a fuel flowmeter work?

a. Volume and viscosity
b. Quantity of movement
c. Capacitive dielectric
d. Pressure and temperature

125. What is engine pressure ratio?

a. The ratio of turbine outlet pressure to compressor inlet pressure
b. The ratio of turbine inlet pressure to compressor inlet pressure
c. Turbine outlet pressure × compressor outlet pressure
d. Compressor inlet pressure divided by turbine outlet pressure

126. On what principle does the fuel contents gauging system work on a modern large aircraft?

a. Capacity affected by dielectric therefore changing EMF of system
b. Capacity affected by dielectric therefore changing resistivity of system
c. Changes in dielectric causes changes in capacitance
d. Change in dielectric causes change in distance between plates and therefore changes capacitance

127. What are the advantages of a nicad battery?

1. More compact.
2. Longer shelf life.
3. Even voltage over total range before rapid discharge.
4. Higher voltage than lead acid type.

a. 2, 3, and 4
b. 1, 2, 3 and 4
c. 1, 2 and 4
d. 1, 2 and 3

128. What would happen if the wastegate of a turbocharged engine seized in the descent?

a. Compressor will overspeed
b. Blow the turbine blades off
c. MAP may exceed its maximum permitted value in the induction manifold
d. rpm may exceed its maximum permitted value

129. When is spark plug fouling most likely to occur?

a. In the climb if you have not adjusted the mixture
b. Cruise power
c. In the descent if you have not adjusted the mixture
d. Max take-off power

130. Why, in the bootstrap system, is the air compressed before it enters the heat exchanger?

a. To provide a constant mass flow to the cabin
b. To ensure maximum pressure and temperature drop across the turbine
c. To ensure most rapid cooling through the heat exchanger
d. To provide a constant temperature airflow to the cabin

131. What is a ram air turbine (RAT) which drives a hydraulic pump used for?

a. Nose wheel steering
b. Flap extension
c. Landing gear extension if the normal system fails
d. Flight controls in case of failure of the engine driven system

132. As altitude increases what does the mixture control do to the fuel flow?

a. Increases flow due to reduced air density
b. Increases flow due to increased air density
c. Reduces flow due to reduced air density
d. Reduces flow due to increased air density

133. What is the coefficient of friction on an aquaplaning (hydroplaning) tyre?

a. 0
b. 0.1
c. 0.5
d. 1.0

134. What is the purpose of the diluter demand valve in the emergency oxygen system?

a. To supply air only when inhaling
b. To dilute oxygen with air in crew oxygen system
c. To dilute oxygen with air in passenger oxygen system
d. To supply oxygen only when inhaling

135. What limits the max. temperature in a gas turbine engine?

a. Temperature in the combustion chamber
b. Temperature at the exhaust
c. Temperature at the turbine
d. Temperature entering the combustion chamber

136. What is the purpose of a surge box inside a fuel tank?

a. Collect sediment at the bottom of the tank
b. Ventilate the tank during high pressure refuelling
c. Allow movement of fuel between tanks while refuelling
d. Prevent sloshing of fuel away from pump inlet during abnormal manoeuvres

137. Emergency oxygen is provided by:

a. one system for both flight deck and cabin
b. two independent systems, one for flight deck, one for cabin
c. two systems each capable of supplying the flight deck and cabin
d. three systems, one for the flight deck, one for the passengers and one for the cabin crew

138. A 12 volt lead acid battery has a broken connection in a cell, the battery:

a. provides 1/12th less voltage for the same time
b. provides 1/12th less voltage for 1/12th less time
c. is unserviceable
d. will suffer from thermal runaway

139. A changeover relay:

a. allows an APU to connect to its busbar
b. allows a GPU to connect to its busbar
c. allows connection of AC to an unserviceable generator's busbar
d. allows an alternate source to supply an essential busbar

140. A relay is:

a. a motorway breakdown service
b. a mechanically operated switch
c. an electrically operated switch
d. another name for a solenoid

141. Fuel heaters are fitted:

a. in the wing fuel tanks
b. in the fuselage fuel tanks
c. in the engine fuel system mounted on the engine
d. all of the above

142. The engine fire extinguisher system is activated:

a. after the engine has been shut down
b. automatically when a fire warning is sensed
c. by the pilot when required
d. automatically after a time delay to allow the engine to stop

143. An unpressurized aircraft is flying above FL100 and therefore must have sufficient oxygen for:

a. both pilots immediately and the cabin crew plus all passengers after 30 minutes above FL100 but below FL130
b. both pilots only
c. both pilots and all passengers
d. both pilots immediately and the cabin crew plus some passengers after 30 minutes above FL100 but below FL130

144. Aircraft above a certain capacity must carry a crash axe, it is provided to:

a. cut through the aircraft fuselage to allow escape
b. enable access behind panels and soundproofing to aid fire fighting
c. cut firewood in a survival situation
d. restrain disorderly passengers

145. The function of stringers in the construction of the fuselage is:

a. to withstand shear stress
b. to provide an attachment for insulation
c. to provide support for the skin and to absorb some of the pressurization strain as tensile loading
d. to provide an alternate load path in the event of the failure of a frame

146. The requirement for an aircraft to have a fuel dumping system is:

a. all aircraft in the Transport Category having a maximum take-off mass (MTOM) of 75 000 kg or greater
b. all aircraft manufactured after 1997 having a MTOM of 7500 kg or more
c. aircraft whose maximum landing mass (MLM) is significantly lower than its maximum take-off mass (MTOM)
d. all aircraft with a seating capacity of 250 or more

147. At what height is it mandatory for one of the flight deck crew to wear an oxygen mask?

a. 25 000 ft
b. 32 000 ft
c. 37 000 ft
d. 41 000 ft

148. A Volumetric Top-off unit (VTO), is provided in a fuel system to:

a. vent the tank to atmosphere when its full
b. allow a main feed tank to be maintained at a predetermine level automatically, while being fed from an auxiliary tank
c. allow the main tank to automatically maintain a predetermined fuel pressure
d. prevent too much fuel from being dumped

149. The type of engine layout shown on page 430 is:

a. two spool
b. turbo fan
c. free turbine
d. prop fan

150. The precautions to be taken during refuelling are:

a. GPU may not be running during refuelling
b. all earthing of aircraft parts to ground equipment must be completed before filler caps are removed
c. passengers may be boarded (traversing the refuelling zone)
d. no radar or HF radios under test within 10 metres

151. What prevents an impulse coupling operating at speeds above start speed, considering that it has flyweights?

a. Electro-magnetic induction
b. Hydraulic clutch
c. Centrifugal force
d. On/off switch

152. What type of fire extinguisher must be on a flight deck?

a. Water
b. Dry powder
c. Special fluid
d. Halon

153. In a Bramah press one piston has an area of 0.05 m^2 and has a force of 10 N acting on it. If the area of the second piston is 0.5 m^2, what force will it produce?

a. 1 N
b. 20 N
c. 25 N
d. 100 N

154. What is the reason for putting the horizontal stabilizer on top of the fin?

a. To be more efficient at high speed
b. No need for anti-icing
c. Create a pitch up by making the aeroplane tail heavy
d. To be out of the way of the wing down wash

155. Where are thermal plugs fitted?

a. Wheel rim
b. Cargo bay
c. Fuel tank
d. Oil tank

156. In a non-stressed skin aircraft, bending loads acting on the wings are taken by:

a. skin
b. spars
c. stringers
d. ribs

157. In a stressed skin aircraft, bending loads acting on the wings are taken by:

a. ribs and stringers
b. stringers and spars
c. spars and skin
d. spars and stringers

158. Hydraulic fluid:

a. needs no special treatment
b. is harmful to eyes and skin
c. is a fire hazard
d. is harmful to eyes and skin, and is also a fire hazard

159. In a modern carburettor, mixture is controlled via:

a. airflow
b. airflow, fuel flow and temperature
c. fuel flow
d. airflow and fuel flow

160. The demand valve of a diluter demand oxygen regulator in normal mode operates when:

a. the pressure to the regulator is more than 500 psi
b. user breathes in
c. user requires 100% oxygen
d. diluter control is in the 'normal' position

161. Torque links on an undercarriage come under most stress:

a. during crosswind landings
b. during pushback
c. when making tight turns when taxiing
d. after take-off

162. If cabin pressure is decreasing, the cabin VSI will indicate:

a. zero
b. climb
c. descent
d. reducing pressure

163. The battery in a search and rescue beacon (SARB) should last for:

a. 72 hours
b. 48 hours
c. 24 hours
d. 12 hours

164. A shuttle valve is used to:

a. restrict the rate of operation of a system
b. select the most suitable system pressure
c. allow two supplies to be available to a service
d. to allow a constant volume pump to idle

165. The temperature of hydraulic fluid is measured:

a. after the cooler
b. in the reservoir
c. at the actuator
d. at the pumps

166. Electrical heating devices:

a. consume little power
b. are used for preventing ice on small areas (e.g. pitot head, windscreen only)
c. are used for de-icing small areas
d. can de-ice large areas because there is a large excess of electrical power available

167. Reverse thrust lights come on when:

a. reverser doors are unlocked
b. when reverse power above idle is selected
c. when reverse thrust is selected in flight
d. when the doors move towards the stowed position inadvertently

168. The magnetos are switched off and the engine continues to run <u>normally</u> .The cause of this fault is:

a. a wire from the magneto coming in contact with the metal aircraft skin
b. hotspots existing in cylinder
c. carbon deposits on spark plug
d. grounding wire from magneto being broken

169. An aircraft is to fly at 29 000 ft. When should the oxygen briefing take place?

a. Before 10 000 ft
b. Before 14 000 ft
c. At 20 000 ft
d. Before take-off

170. What is the purpose of the magneto impulse coupling?

a. To give a retarded spark during starting
b. Reduce the rate of rotation of the magneto
c. Advance the ignition and give a hotter spark during starting
d. Automatically increases spark rate at high engine speeds

171. The excess cabin altitude alerting system must operate to warn the crew at:

a. 8000 ft
b. 10 000 ft
c. 13 000 ft
d. 14 000 ft

172. The 'torsion box' of a modern aircraft wing structure consists of:

a. spars, skin, frames and stringers
b. spars, skin, frames and ribs
c. spars, skin, longerons and ribs
d. spars, skin, stringers and ribs

173. A device in a hydraulic system which acts in the same way as a diode in an electrical circuit is a:

a. restrictor valve
b. sequence valve
c. fuse
d. one way check valve

174. What does three green lights represent when the landing gear is selected down?

a. The gear is down
b. The gear is down and locked
c. The gear and doors are down and locked
d. The gear is travelling between up and down

175. Which is the correct statement regarding a large aircraft fitted with both inboard and outboard ailerons?

a. The outboard ailerons are used only when the landing gear is selected down
b. The outboard ailerons are used only when the landing gear is retracted
c. The inboard ailerons are used only when the flaps are retracted
d. The inboard ailerons are only used when the flaps are extended

176. How do differential ailerons work?

a. Increase lift on down going wing and decrease lift on up going wing
b. Increase drag on up going wing and decrease drag on down going wing
c. Equalize the drag on up going and down going wings
d. Equalize the lift on up going and down going wings

177. What is the effect of heating flight deck windows?

a. To demist the interior of the window if normal demist does not function correctly
b. To protect the windows against bird strike
c. To protect the windows against ice formation
d. To protect the windows against bird strike and ice formation

178. If an aircraft suffers decompression what happens to the indications on a cabin VSI, cabin altimeter and differential pressure gauge?

a. VSI up, altimeter up, differential pressure gauge down
b. VSI, altimeter, differential pressure gauge all unchanged
c. VSI down, altimeter up, differential pressure gauge down
d. VSI up, altimeter down, differential pressure gauge down

179. What happens if a gaseous oxygen cylinder is over-pressurized?

a. A pressure relief valve vents the excess pressure into the atmosphere
b. A bursting disc vents the complete contents of the cylinder(s) to atmosphere
c. A pressure regulator will prevent the excess pressure damaging the system
d. A pressure relief valve vents the excess pressure into the fuselage

180. If a fuel sample appears cloudy, this is:

a. an indication of air in the fuel
b. normal
c. due to the addition of FSII
d. an indication of water in the fuel

181. Fuel tanks accumulate moisture, the most practical way to limit this in an aircraft flown daily is to:

a. secure the filler cap tightly and plug the drains
b. drain the tank at the end of each day
c. fill the tank after each flight
d. drain the water before flight

182. How much fuel can be jettisoned?

a. A specific amount
b. The captain decides
c. All
d. A specified amount must remain

183. The DLL of a transport aircraft is:

a. 1.5g
b. 2.5g
c. 3.4g
d. 3.75g

184. A current limiter fuse:

a. will rupture below fault conditions
b. has a high melting point so carrying a considerable current overload before rupturing
c. is not used in TRU protection
d. has a low melting point so will rupture quickly if a current overload occurs

185. What type of electrical motor is used as a starter motor?

a. Series
b. Shunt
c. Compound
d. Induction

186. The power for LP fuel pumps is:

a. 28 V DC
b. 28 V AC
c. 115 V DC
d. 200 V AC

187. What is a relay?

a. Solenoid valve
b. Magnetic switch
c. Converts electrical energy into heat energy
d. Used in starter motor circuit

188. An aircraft is in straight and level flight at a constant cabin altitude when the crew notice the rate of climb indicator reads –200 ft/min. What will be the sequence of events?

a. Crew should begin a climb to regain cabin altitude
b. Cabin altitude will increase to outside atmospheric pressure
c. Cabin altitude will descend to, and continue beyond normal max. diff., at which point the safety valves will open
d. Cabin altitude will increase to, and continue beyond normal max. diff., at which point the safety valves will open

189. What is the frequency band for ADF?

a. Hectometric and kilometric
b. Metric
c. Centimetric
d. Decimetric

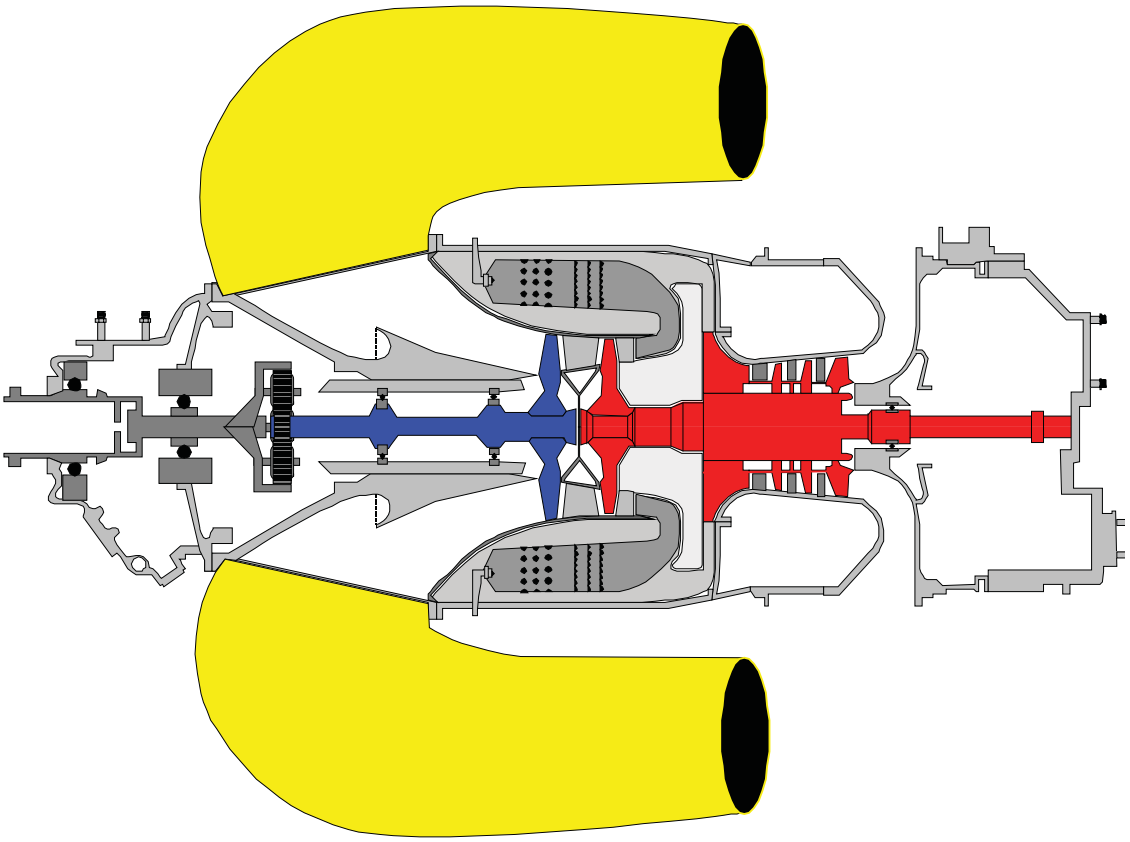


Illustration for Question 149, page 424

Practice Systems Examination Paper

1. With reference to stringers they:

a. integrate the strains due to pressurization to which the skin is subjected and convert them into a tensile stress
b. provide sound and thermal insulation
c. perform no structural role
d. withstand shear stresses

2. How can wing bending moments be reduced in flight?

a. By using aileron up float and keeping the centre section fuel tanks full for as long as possible
b. By having tail mounted engines and using aileron down float
c. Using aileron up float and using the fuel in the wing tanks last
d. By having wing mounted engines and using the wing fuel tanks first

3. Kreuger flaps are positioned on the:

a. trailing edge
b. leading edge
c. outboard leading edge
d. inboard leading edge

4. The purpose of inboard ailerons is to reduce wing:

a. bending at high speed
b. twisting at high speed
c. bending at low speed
d. twisting at low speed

5. The 'torsion box' of a modern aircraft wing structure consists of:

a. spars, skin, frames and stringers
b. spars, skin, frames and ribs
c. spars, skin, longerons and ribs
d. spars, skin, stringers and ribs

6. Which is the correct statement regarding a large aircraft fitted with both inboard and outboard ailerons?

a. The outboard ailerons are used only when the landing gear is selected down
b. The outboard ailerons are used only when the landing gear is retracted
c. Only the inboard ailerons are used when the flaps are retracted
d. Only the inboard ailerons are used when the flaps are extended

7. What is the effect of heating flight deck windows?

a. To demist the interior of the window if normal demist does not function correctly
b. To protect the windows against bird strike
c. To protect the windows against ice formation
d. To protect the windows against bird strike and ice formation

8. Differential ailerons work by:

a. increasing lift on down going wing and decreasing lift on up going wing
b. increasing drag on up going wing and decreasing drag on down going wing
c. equalizing the drag on up going and down going wings
d. equalizing the lift on up going and down going wings

9. An artificial feel system is:

a. connected in series with an irreversible servo system
b. connected in parallel with an irreversible servo system
c. connected in parallel with a reversible servo system
d. connected in series with a reversible servo system

10. Why are two longitudinal trim switches fitted to the control column?

a. There are two trim motors
b. Fast trimming at low altitude and a slower rate at higher altitudes
c. As a safety precaution to reduce the possibility of trim runaway
d. To prevent both pilots operating the trim at the same time

11. On a modern jet transport the hydraulic reservoirs are normally pressurized:

a. by a separate helium gas supply
b. by air from the air conditioning system
c. by engine bleed air
d. in flight only

12. A device in a hydraulic system which acts in the same way as a diode in an electrical circuit is a:

a. restrictor valve
b. sequence valve
c. fuse
d. one way check valve

13. A ram air turbine may be used to provide emergency hydraulic power for:

a. landing gear extension
b. flight controls
c. nose wheel steering
d. leading edge flap extension only

14. An under inflated tyre on a dry runway:

a. decreases viscous hydroplaning speed
b. causes the tyre temperature to fall
c. increases wear on the shoulder
d. increases wear on the crown

15. If an aircraft suffers decompression what happens to the indications on a cabin VSI, cabin altimeter and differential pressure gauge?

a. VSI up, altimeter up, differential pressure gauge down
b. VSI, altimeter, differential pressure gauge all unchanged
c. VSI down, altimeter up, differential pressure gauge down
d. VSI up, altimeter down, differential pressure gauge down

16. An aircraft is in straight and level flight at a constant cabin altitude when the crew notice the rate of climb indicator reads –200 ft/min. What will be the sequence of events?

a. Crew should begin a climb to regain cabin altitude
b. Cabin altitude will increase to outside atmospheric pressure
c. Cabin altitude will descend to, and continue beyond normal max. diff., at which point the safety valves will open
d. Cabin altitude will increase to, and continue beyond normal max. diff., at which point the safety valves will open

17. What is the purpose of the ground cooling fan in a bootstrap air cycle conditioning system?

a. To draw cooling air over the turbine
b. To draw cooling air over the heat exchangers
c. To blow air onto the compressor
d. To re-circulate air through the mixing manifold

18. If the outflow valves failed closed in flight the effect would be:

a. to damage the aircraft skin
b. to increase cabin pressure to max differential
c. to increase cabin altitude
d. to shut down the air conditioning system

19. Modern transport aircraft fuel booster pumps are generally:

a. centrifugal and powered by DC induction motors
b. centrifugal and powered by AC induction motors
c. spur gear and powered by DC induction motors
d. spur gear and powered by AC induction motors

20. Modern passenger aircraft fuel tanks are pressurized by:

a. low pressure bleed air
b. low pressure inert gas system
c. the air discharged by the air conditioning system
d. ram air through the vent system

21. Where are the fuel heaters fitted on jet aircraft?

a. In each tank
b. On the engine
c. They are not required
d. Centre tank only

22. The fuel cross feed system enables fuel to be:

a. supplied to the outboard engines from any outboard tank
b. transferred from the centre tank to the wing tanks only
c. supplied to any engine mounted on a wing from any tank within that wing
d. supplied to any engine from any tank

23. The areas heated by a bleed air system on a modern jet passenger transport are:

a. leading edges of all aerofoil surfaces
b. leading edges of all aerofoil surfaces including flaps
c. leading edges of all aerofoil surfaces including slats (where fitted)
d. upper surfaces of the wings only

24. The principle upon which the vibrating probe (Rosemount) ice detector is based is:

a. inferential
b. accretion
c. ice removal
d. evaporation

25. Which one of the following ice protection systems can only be used as a de-icing system?

a. Mechanical
b. Electrical
c. Chemical
d. Thermal

26. Because of its function an AND gate is also referred to as an:

a. all or nothing gate
b. any or nothing gate
c. invert or not gate
d. either or gate

27. The stators of a three phase alternator are separated by:

a. 60 degrees
b. 90 degrees
c. 120 degrees
d. 180 degrees

28. If a CSDU overheat warning occurs, the:

a. CSDU can be disconnected and not used for the rest of the flight
b. pilot must throttle back the effected engine
c. CSDU can be disconnected and then re-connected when it has cooled down
d. CSDU must be disconnected and the alternator is controlled directly by the pilot

29. What is disconnected if the fire handle is pulled in an aircraft with an AC generator system?

a. Generator control relay (exciter control relay) and GCB
b. GCB
c. BTB
d. Generator control relay (exciter control relay) and BTB

30. A generator that produces 400 Hz at 6000 rpm has how many pole pairs?

a. 12
b. 8
c. 6
d. 4

31. If a 12 volt, 6 cell battery has one dead cell:

a. it cannot be used
b. it can be used but the output voltage is reduced by 1/12
c. it can be used but the output voltage and capacity are reduced by 1/12
d. it can be used but the output capacity is reduced by 1/12

32. Incorrect bonding of the aircraft structure could cause:

a. corrosion at skin joints
b. circuit breaker trips
c. static on the radio
d. VOR interference

33. 'Earth Return' system means that:

a. both battery and earth terminals are connected to the voltage regulators' shunt field
b. battery positive and generator negative terminals are connected to a/c structure
c. battery negative terminal is connected to the generator negative terminal with low resistance cable
d. battery and generator negative terminals are connected to the aircraft structure

34. The frequency of an AC generator is dependent upon:

a. poles only
b. poles and rpm
c. rpm only
d. load

35. In an aircraft which uses DC as the primary source of power, AC for the instruments may be obtained from:

a. a rectifier
b. the AC busbar
c. a TRU
d. an inverter

36. The wavelength of a VOR is:

a. metric
b. decimetric
c. hectometric
d. centimetric

37. What is the wavelength that corresponds to the frequency 121.95 MHz?

a. 246 m
b. 2.46 cm
c. 2.46 m
d. 24.6 m

38. Skip distance is longest by ..... and with a ..... frequency.

a. day low
b. day high
c. night low
d. night high

39. The skip zone of an HF transmission will increase with:

a. an increase in frequency and an increase in height of the reflective (refractive) layer
b. an increase in frequency and a decrease in height of the reflective (refractive) layer
c. an decrease in frequency and an increase in height of the reflective (refractive) layer
d. an decrease in frequency and a decrease in height of the reflective (refractive) layer

40. How are the loads on an aircraft busbar connected?

a. In parallel so that the current reduces through the busbar as loads are switched off
b. In parallel so that the voltage reduces through the busbar as loads are switched off
c. In series so that the current reduces through the busbar as loads are switched off
d. In series so that the voltage reduces through the busbar as loads are switched off

41. Hot or vital busbars are:

a. heated by bleed air
b. connected directly to the battery
c. connected directly to the DC generator
d. connected directly to the AC generator

42. A static inverter is a:

a. transistorized unit that converts AC to DC
b. transistorized unit that converts DC to AC
c. fixed unit that changes DC voltages
d. fixed unit that changes AC voltages

43. If AC generators are connected in parallel the reactive loads are balanced by adjusting the:

a. frequency
b. torque of the CSDU
c. energizing current
d. voltage

44. The voltage regulator of a DC generator is connected in:

a. series with the armature and parallel with the shunt field
b. parallel with the armature and parallel with the shunt field
c. series with the armature and series with the shunt field
d. parallel with the armature and series with the shunt field

45. If the frequency of a series capacitive circuit increases, what happens to the current?

a. It increases
b. It decreases
c. It stays the same
d. It increases or decreases

46. Which is the correct statement(s) with regard to flight crew oxygen requirements for a pressurized aircraft:

1. at all times when the cabin pressure altitude exceeds 13 000 ft
2. at all times when the cabin pressure altitude is between 10 000 ft and 13 000 ft except for the first 30 mins
3. in no case less than 30 mins if certificated below 25 000 ft
4. in no case less than 2 hours if certificated above 25 000 ft

a. 1, 2, 3 and 4
b. 1 and 2
c. 1, 2 and 3
d. 2 and 3

47. The advantages of a chemical oxygen generator system are:

1. it is a self-contained system
2. it can be filled from outside the pressure hull
3. the flow of oxygen can be regulated
4. it can be turned off
5. it is relatively light

a. 1 and 5
b. 1, 2 and 4
c. 2 and 4
d. 1, 2, 3, 4 and 5

48. An aircraft operating at FL350 must have sufficient supplementary oxygen available for 100% of passengers for a descent from its maximum certificated operating altitude to allow a descent to:

a. 13 000 ft in 30 minutes
b. 15 000 ft in 4 minutes
c. 15 000 ft in 10 minutes
d. 10 000 ft in 4 minutes

49. The passenger oxygen drop down mask stowage doors are released:

a. barometrically operated latch
b. electrically for chemical generator systems and pneumatically for gaseous systems
c. electrically for gaseous systems and pneumatically for chemical generator systems
d. by the cabin crew

50. The fire extinguisher system for an engine is activated:

a. automatically immediately a fire is sensed
b. automatically once the engine has been shut down
c. by the pilot immediately a fire is detected
d. by the pilot once the engine has been shut down

51. The flight deck warning of an engine fire is:

a. individual warning lights and bells
b. a common light and common aural warning
c. aural warning only
d. individual warning lights and a common aural warning

52. High cylinder head temperatures on a piston engine are associated with:

a. mass ratio of 1:15
b. cruise mixture setting
c. a weak mixture
d. a rich mixture

53. In a gas turbine the maximum gas temperature is reached:

a. in the combustion chamber
b. at the turbine exit
c. across the turbine
d. in the cooling air around the turbine

54. When TAS increases the pitch angle of a constant speed propeller:

a. increases
b. decreases
c. remains constant
d. decreases and then returns to its original angle

55. From the list select the conditions for highest engine performance:

1. low temperature
2. low humidity
3. high pressure
4. high temperature
5. high humidity
6. low pressure

a. 1, 2 and 6
b. 1, 3 and 5
c. 3, 4 and 5
d. 1, 2 and 3

56. A torque meter is situated:

a. between the engine and propeller
b. on the auxiliary gearbox
c. between the turbine and the gearbox
d. in the spinner housing

57. A reverse thrust door warning light is illuminated when:

a. the reverser doors are unlocked
b. the thrust levers are lifted beyond ground idle
c. the reverse thrust mechanism is not operating correctly
d. asymmetric reverse thrust has been selected

58. Adjusting the mixture of piston engines as aircraft altitude increases is necessary to:

a. increase fuel flow to compensate for decreasing air density
b. decrease fuel flow to compensate for decreasing air density
c. increase fuel flow to compensate for increasing air density
d. decrease fuel flow to compensate for increasing air density

59. The power output of a piston engine can be calculated by multiplying:

a. force by distance
b. work by velocity
c. pressure by moment arm
d. torque by rpm

60. When high pressure bleed valves open they:

a. reduce the EPR
b. increase the fuel flow
c. reduce the EGT
d. increase the thrust

61. The fan stage of a ducted fan engine is driven by the:

a. LP turbine
b. IP turbine
c. HP turbine
d. HP compressor through reduction gearing

62. In a four stroke engine, ignition occurs:

a. before TDC every 2nd rotation of the crankshaft
b. at TDC every 2nd rotation of the crankshaft
c. after TDC every 2nd rotation of the crankshaft
d. before TDC every rotation of the crankshaft

63. A fixed pitch propeller blade has wash-out from root to tip in order to:

a. keep the local angle of attack constant along the blade length
b. keep the pitch angle constant along the blade length
c. keep the local angle of attack at its optimum value along the blade length
d. decrease the blade tangential speed from root to tip

64. The alpha range of a variable pitch propeller is between:

a. feather and flight fine pitch stop
b. feather and ground fine pitch stop
c. flight fine pitch stop and reverse stop
d. ground fine pitch stop and reverse stop

65. With the CSU governor in the underspeed condition, oil will be directed to:

a. increase the blade angle
b. decrease the blade angle
c. decrease the rpm
d. open the throttle valve

66. In a fan jet engine the bypass ratio is:

a. internal mass airflow divided by external mass airflow
b. external mass airflow divided by internal mass airflow
c. internal mass airflow divided by mass fuel flow
d. mass fuel flow divided by internal mass airflow

67. In a normally aspirated piston engine carburettor icing can occur:

a. between 0°C and –10°C
b. at more than +10°C
c. only at less than +10°C if there is visible moisture
d. above 5000 ft only

68. At what speed does the LP compressor run?

a. The speed of the LP turbine
b. The speed of the IP turbine
c. The speed of the HP turbine
d. Constant speed

69. The magnetos are switched off and the engine continues to run normally. The cause of this fault is:

a. a wire from the magneto coming into contact with aircraft metal skin
b. hotspots in the cylinder
c. carbon fouling of the spark plugs
d. grounding wire from the magneto broken

70. The volume of the scavenge pump(s) in an engine lubrication system is greater than that of the pressure pump(s) in order to:

a. prevent cavitation of the oil system feedlines
b. ensure heat is dissipated more efficiently
c. compensate for thermal expansion of the lubricating fluid
d. ensure that the engine sump remains dry

71. Variable inlet guide vanes are fitted to gas turbine engines to:

a. increase the mass flow at high speeds
b. prevent a compressor stall at low engine speed
c. prevent a compressor stall at high engine speeds
d. decelerate the flow into the compressor

72. The theoretically correct air to fuel ratio for efficient combustion in a gas turbine under constant speed conditions is:

a. 5:1
b. 15:1
c. 25:1
d. 40:1

73. A gas turbine engine power change is achieved by adjusting the amount of:

a. fuel supplied and the amount of air entering the compressor
b. fuel supplied
c. air supplied
d. fuel supplied and the amount of air entering the turbine

74. What happens to the pressure and velocity of the gas stream from root to tip across the nozzle guide vanes?

a. Both remain constant
b. Both increase
c. Velocity increases, pressure decreases
d. Velocity decreases, pressure increases

75. What is a crank assembly?

a. Crankcase, crankshaft, pistons and connecting rods
b. Crankshaft, pistons and connecting rods
c. Propeller, crankshaft and connecting rods
d. Camshaft, pistons and connecting rods

76. The effect of climbing at rated rpm but less than rated boost is to:

a. increase full throttle height
b. reduce full throttle height
c. produce no change to the full throttle height
d. reduce the time to full throttle height