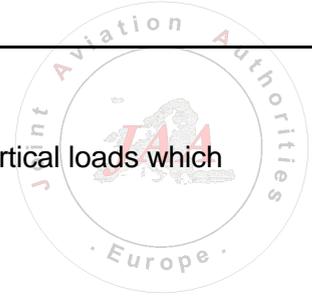


**AIRCRAFT GENERAL KNOWLEDGE (1)**  
**AIRFRAME/SYSTEMS/POWERPLANT**

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- 1 In flight, a cantilever wing of an airplane containing fuel undergoes vertical loads which produce a bending moment:
- A highest at the wing root
  - B equal to the zero -fuel weight multiplied by the span
  - C equal to half the weight of the aircraft multiplied by the semi span
  - D lowest at the wing root
- 2 The function of an accumulator in a hydraulic brake system is:
- A to supply a limited amount of brake energy in case the hydraulic system normally powering the brakes does not function anymore.
  - B to damp pressure fluctuations of the auto brake system.
  - C to store the hydraulic energy recovered by the anti skid system to prevent wheel blocking.
  - D to function as a buffer to assist the hydraulic system during heavy braking.
- 3 Compared to a tyre fitted with an inner tube, a tubeless tyre presents the following characteristics:
- 1 - high heating
  - 2 - valve fragility
  - 3 - lower risk of bursting
  - 4 - better adjustment to wheels
- The combination containing all the correct statements is:
- A 3, 4.
  - B 2, 3.
  - C 2, 4.
  - D 1, 2, 3, 4.
- 4 On an aeroplane, spoilers are:
- A lower wing surface devices, their deflection is symmetrical or asymmetrical.
  - B upper wing surface devices, their deflection is symmetrical or asymmetrical.
  - C lower wing surface devices, their deflection is always asymmetrical.
  - D upper wing surface devices, their deflection is always asymmetrical.
- 5 In hydraulic system, a shuttle valve:
- A allows two units to be operated by one pressure source.
  - B regulates pump delivery pressure.
  - C allows two possible sources of pressure to operate one unit.
  - D is a self-lapping non-return valve.
- 6 The function of the selector valve is to:
- A discharge some hydraulic fluid if the system pressure is too high.
  - B automatically activate the hydraulic system.
  - C select the system to which the hydraulic pump should supply pressure.
  - D communicate system pressure to either side of an actuator.

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- 7 Assuming cabin differential pressure has reached the required value in normal flight conditions, if flight altitude and air conditioning system setting are maintained:
- A the mass air flow through the cabin is constant.
  - B the outflow valves will move to the fully open position.
  - C the pressurisation system ceases to function until leakage reduces the pressure.
  - D the outflow valves will move to the fully closed position.
- 8 On most modern airliners the cabin pressure is controlled by regulating the:
- A Airflow leaving the cabin.
  - B Airflow entering the cabin.
  - C RPM of the engine.
  - D Bleed air valve.
- 9 In a cabin air conditioning system, equipped with a bootstrap, the mass air flow is routed via the:
- A turbine outlet of the cold air unit to the primary heat exchanger inlet.
  - B compressor outlet of the cold air unit to the primary heat exchanger inlet.
  - C secondary heat exchanger outlet to the turbine inlet of the cold air unit.
  - D secondary heat exchanger outlet to the compressor inlet of the cold air unit.
- 10 In jet aeroplanes the 'thermal anti-ice system' is primarily supplied by
- A bleed air from the engines.
  - B turbo compressors.
  - C ram air, heated via a heat exchanger.
  - D the APU.
- 11 Generally, for large aeroplanes, electrical heating for ice protection is used on:
- A Slat leading edges.
  - B Fin leading edges.
  - C Pitot tubes.
  - D Elevator leading edges.
- 12 Fire precautions to be observed before refuelling are:
- A All bonding and connections to the earth terminal between ground equipment and the aircraft should be made before filler caps are removed.
  - B Ground Power Units (GPU) are not to be operated.
  - C Passengers may be boarded (traversing the refuelling zone) providing suitable fire extinguishers are readily available.
  - D Aircraft must be more than 10 metres from radar or HF radio equipment under test.
- 13 During fuelling the automatic fuelling shut off valves will switch off the fuel supply system when:
- A there is fire.
  - B the surge vent tank is filled.
  - C fuelling system has reached a certain pressure.
  - D the fuel has reached a predetermined volume or mass.

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- 14 Which of the following statements, relating to the application of Ohm's Law, is the most correct?
- A power in the circuit is inversely proportional to the square of the current.
  - B current in a circuit is inversely proportional to the electromotive force.
  - C Current in a circuit is directly proportional to the applied electromotive force.
  - D The current in a circuit is directly proportional to the resistance of the circuit.
- 15 The connection in parallel of two 12 volt/ 40 amp hours batteries, will create a unit with the following characteristics;
- A 12 volt / 40 amp hours
  - B 12 volt / 80 amp hours
  - C 24 volt / 40 amp hours
  - D 24 volt / 80 amp hours
- 16 A relay is:
- A An electromagnetically operated switch.
  - B An electrical security switch.
  - C A switch specially designed for AC circuits.
  - D An electrical energy conversion unit.
- 17 In order that DC generators will achieve equal load sharing when operating in parallel, it is necessary to ensure that:
- A adequate voltage differences exists.
  - B equal loads are connected to each generator busbar before paralleling.
  - C the synchronising bus-bar is disconnected from the busbar system.
  - D their voltages are almost equal.
- 18 A bus-bar is:
- A the stator of a moving coil instrument.
  - B a device which may only be used in DC circuits.
  - C a distribution point for electrical power.
  - D a device permitting operation of two or more switches together.
- 19 It may be determined that an aircraft is not properly bonded if:
- A there is interference on the VOR receiver.
  - B there is heavy corrosion on the fuselage skin mountings.
  - C static noises can be heard on the radio.
  - D a circuit breaker pops out.
- 20 The alternators, when connected, are usually connected:
- A Dependant on the type of generator.
  - B Dependant on the type of engine.
  - C In parallel mode.
  - D In series mode.

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- 21 The services connected to a supply bus-bar are normally in:
- A parallel, so that isolation of loads decreases the bus-bar voltage.
  - B series, so that isolation of loads increases the bus-bar voltage.
  - C parallel, so that isolating individual loads decreases the bus-bar current consumption.
  - D series, so that isolating one load increases the bus-bar current consumption.
- 22 The wavelength of a radio signal transmitted at the frequency of 75 MHz is:
- A 4 m.
  - B 40 m.
  - C 7.5 m.
  - D 75 m.
- 23 The working cycle of a four-stroke engine is:
- A compression induction, power, exhaust.
  - B induction, compression, expansion, power.
  - C induction, compression, power, exhaust.
  - D induction, power, compression, exhaust.
- 24 The oil system for a piston engine incorporates an oil cooler that is fitted:
- A in the return line to the oil tank after the oil has passed through the scavenge pump
  - B between the oil tank and the pressure pump
  - C after the pressure pump but before the oil passes through the engine
  - D after the oil has passed through the engine and before it enters the pump
- 25 The purpose of an ignition switch is to:
- A control the primary circuit of the magneto
  - B connect the secondary coil to the distributor
  - C connect the battery to the magneto
  - D connect the contact breaker and condenser in series with the primary coil
- 26 Which statement is correct concerning the effect of the application of carburettor heat?
- A The density of the air entering the carburettor is reduced, thus leaning the fuel/air mixture.
  - B The volume of air entering the carburettor is reduced, thus enriching the fuel/air mixture.
  - C The density of the air entering the carburettor is reduced, thus enriching the fuel/air mixture.
  - D The volume of air entering the carburettor is reduced, thus leaning the fuel/air mixture.
- 27 One of the advantages of a turbocharger is:
- A to make the power available less dependent on altitude.
  - B that it has a better propulsive efficiency.
  - C that there is no torsion at the crankshaft.
  - D that there is no danger of detonation.

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- 28** In a piston engine, the purpose of an altitude mixture control is to:
- A** enrich the mixture strength due to decreased air density at altitude.
  - B** weaken the mixture strength because of reduced exhaust back pressure at altitude.
  - C** prevent a weak cut when the throttle is opened rapidly at altitude.
  - D** correct for variations in the fuel/air ratio due to decreased air density at altitude.
- 29** The main purpose of the mixture control is to:
- A** adjust the fuel flow to obtain the correct fuel/air ratio.
  - B** decrease the air supplied to the engine.
  - C** increase the oxygen supplied to the engine.
  - D** decrease the oxygen supplied to the engine.
- 30** The 'slipstream effect' of a propeller is most prominent at:
- A** low airspeeds with high power setting.
  - B** high airspeeds with low power setting.
  - C** high airspeeds with high power setting.
  - D** low airspeeds with low power setting.
- 31** The pitch angle of a constant-speed propeller
- A** increases with increasing true air speed.
  - B** only varies with engine RPM.
  - C** decreases with increasing true air speed.
  - D** is independent of the true air speed.
- 32** During climb with constant throttle and RPM lever setting (mixture being constant) the:
- A** RPM decreases.
  - B** Manifold Air Pressure (MAP) decreases.
  - C** RPM increases.
  - D** Manifold Air Pressure (MAP) increases.
- 33** When starting an engine or when the engine runs at an idle rpm on ground, the mixture is:
- A** rich, because the choke valve is closed
  - B** rich, to make starting possible and to cool the engine sufficiently when idling
  - C** lean, to prevent that the engine consumes too much fuel.
  - D** rich, because carburettor heat is switched on
- 34** The diffuser in a centrifugal compressor is a device in which the:
- A** pressure rises and velocity falls.
  - B** pressure rises at a constant velocity.
  - C** velocity, pressure and temperature rise.
  - D** velocity rises and pressure falls.

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**35** In very cold weather, the pilot notices during startup, a slightly higher than normal oil pressure.

This higher pressure:

- A** is normal, if it decreases after startup.
- B** is abnormal and requires the engine to be shut down.
- C** is abnormal but does not require the engine to be shut down.
- D** requires an oil change.

**36** The indication of the fire detection systems is performed by a:

- A** warning bell.
- B** warning light and a warning bell (or aural alert).
- C** gear warning.
- D** warning light.

**37** The bimetal strip detectors of an engine fire detection system:

- 1 - are arranged in series.
- 2 - are arranged in parallel.
- 3 - open during a fire.
- 4 - close during a fire.

The combination containing all of the correct statements is:

- A** 1 and 4 only.
- B** 1 and 3 only.
- C** 2 and 4 only.
- D** 2 and 3 only.

**38** The demand valve of a diluter-demand type oxygen regulator in normal mode, operates when the:

- A** diluter control is in normal position
- B** user breathes in
- C** pressure in the oxygen reservoir is more than 500 psi
- D** user requires 100 percent oxygen

**39** Oxygen systems are systems used on pressurized airplanes in:

- 1. an emergency in the case of depressurization.
- 2. an emergency in the case of the indisposition of a passenger.
- 3. normal use in order to supply oxygen to the cabin.
- 4. an emergency in the case of smoke or toxic gases.

The combination regrouping all the correct statements is:

- A** 1,4
- B** 1, 2, 4
- C** 3
- D** 2, 3