

FDS 20

AIRCRAFT GENERAL KNOWLEDGE TIME: 2.5 Hrs

SECTION A: ANSWER ALL QUESTIONS

1. What is the purpose of the wing main spar?
 - a. To withstand bending and torsional loads.
 - b. To withstand compressive and torsional loads.
 - c. To withstand compressive and shear loads.
 - d. To withstand bending and shear loads.

2. In the construction of airframes the primary purposes of frames or formers is to:
 - a. provide a means of attaching the stringers and skin panels.
 - b. oppose hoop stresses and provide shape and form to the fuselage
 - c. form the entrance door posts.
 - d. support the wings.

3. The skin of a modern pressurized aircraft:
 - a. Is made up of light alloy steel sheets built on the monocoque principle
 - b. houses the crew and the payload
 - c. provides aerodynamic lift and prevents corrosion by keeping out adverse weather
 - d. is primary load bearing structure carrying much of the structural loads

4. The primary purpose of the fuselage is to:
 - a. support the wings
 - b. houses the crew and the payload
 - c. keepin out adverse weather
 - d. is primary load bearing structure carrying much of the structural loads

5. Station numbers (Stn) and water lines (WL) are:
 - a. means of locating airframe structure and components
 - b. passenger seat locations
 - c. runway markings for guiding the aircraft to the terminal
 - d. compass alignment markings

6. A relief valve in hydraulic system:

- a. relieves below system pressure
- b. maintains pressure to a priority circuit
- c. relieves at its designed pressure
- d. prevents excessive pressure through increased fluid temperature

7. The primary purpose of a hydraulic reservoir is:

- a. to compensate for leaks ,displacement and expansion
- b. to allow a space into which spare fluid may be stored
- c. to indicate system contents
- d. to maintain fluid between a jack and accumulator

8. The purpose of an accumulator is to:

- a. relieve excess pressure
- b. store fluid under pressure
- c. store compressed gas for tyre inflation
- d. remove air from the system

9. A hand pump is usually fitted:

- a. for ground servicing purposes
- b. lowering the landing gear in an emergency
- c. pressurizing the oleo struts in the air
- d. retracting the gear after take-off

10. Creep (Slippage):

- a. is not a problem in tubeless tyres
- b. refers to the movement of the aircraft tyres against the brakes
- c. can rip out the inflation valve on tubed tyres and deflate the tyre
- d. can be prevented by painting lines on the wheel and tyre

11. The most likely cause of brake fade is:

- a. oil or grease on the brake drums
- b. worn stators
- c. the pilot reducing the brake pressure
- d. the brake pads overheating

12. The pressure needed to operate the wheel brake on a LARGE aircraft comes from:

- a. the aircraft main hydraulic system
- b. the pilot brake pedals
- c. a self-contained power pack
- d. hydraulic reservoir

13. Landing gear Lock pins are:

- a. Fitted before flight to ensure the landing gears are fully cocked
- b. removed before flight
- c. fitted after flight to maintain a hydraulic lock in the down lock jack
- d. removed prior to flight and stowed on the aircraft where they are visible to the crew

14. A likely cause of nose wheel shimmy is:

- a. aircraft is overweight
- b. the tyre pressure is too high
- c. the aircraft is incorrectly loaded
- d. a torque link is worn or damaged

15. Creep (Slippage):

- a. can damage the braking system
- b. can be measured by painting marks on the tyre and wheel rim
- c. may cause excess wear
- d. never occurs in new tyres

16. Baffles are fitted in aircraft fuel tanks:

- a. to prevent incorrect fuel distribution
- b. to prevent fuel surging during aircraft manoeuvres
- c. to prevent the static build up in the tank during refueling
- d. to channel fuel to the vent valve

17. The aircraft cannot be refueled while:

- a. the ground power unit is operating on the ramp
- b. passengers are walking through the refueling zones
- c. passengers are boarding
- d. the APU is running

18. The fuel cross feed valves are fitted in order to facilitate:

- a. the use of fuel from any tank to any engine
- b. refueling when only one bowser is in use
- c. isolation of the engine from the fuel system in case of an engine fire
- d. transfer of fuel between the main fuel tanks

19. Fuel is heated:

- a. to stop cavitation in the High Pressure Fuel Pump
- b. to maintain constant viscosity
- c. to prevent contamination
- d. to stop ice blocking the low Pressure fuel filter

20. A photoelectric cell produces electricity when:

- a. two metals are heated
- b. exposed to a source of light
- c. light source is removed
- d. exposed to heat of the sun

21. The unit of electrical power is measured in:

- a. Watts
- b. amperes
- c. ohms
- d. volts

22. Three resistors of 60 Ohms each in parallel give a total resistance of :

- a. 180 ohms
- b. 40 ohms
- c. 30 ohms
- d. 20 ohms

23. The total resistance of a number of power consumer devices connected in series:

- a. the addition of the individual resistances
- b. the addition of the reciprocals of the individual resistance
- c. twice the reciprocals of the individual resistances
- d. the reciprocal of the total

24. The area of force around a magnet is termed:

- a. conductance
- b. stable
- c. magnetic resistance
- d. magnetic field

24. To increase the electromagnetic force one would:

- a. Increase the coil resistance
- b. Reduce the current flow
- c. Lower EMF
- d. Increase current flow

SECTION B: ANSWER ANY FIVE QUESTIONS

Q1. a) List the FIVE basic sections of a Gas Turbine Engine (5 Mks)

b) Briefly describe the Series of events that take place in each sections (15 Mks)

Q2. a) Outline the basic requirements of Aircraft Engines (5 Mks)

b) Briefly describe the Series of events that take place in each sections (15 Mks)

Q3. a) List the basic components of aero piston (reciprocating) Engines (5 Mks)

b) With the aid of a Pressure –Volume Diagram, discuss the Otto Cycle (15 Mks)

Q4. a) Outline the requirements of Aircraft system hydraulic fluid (5Mks)

b) State Pascal's Law (2Mks)

c) With the aid of a diagram, list the components and describe the operation of A Basic Aircraft Hydraulic system (8 Mks)

Q5. a) Highlight the three major functions of aircraft Landing gears (3 Mks)

b) With the aid of a diagram, describe the operation of Landing gear ole-Pneumatic strut (4 Mks)

c) List the safety mechanisms and devices installed on retractable landing gear systems (4 Mks)

d) Illustrate any two loads applicable to aircraft structures (4 Mks)

Q6. a) State Ohms Law (2 Mks)

b) Explain the factors affecting resistance (6 Mks)

b) List three properties of a magnet (3 Mks)

C) Define the following terminologies (4 Mks)

1. Magnetic Flux

2. Permeability