

B.E DEGREE EXAMINATIONS: NOV/ DEC 2010

Fourth semester

AERONAUTICAL ENGINEERING

U07AR402: Aircraft Systems and Instrumentations

Time: Three Hours**Maximum Marks: 100****Answer All Questions:-****PART A (10 x 1 = 10 Marks)**

1. All these mechanical linkages are connected into cockpit controls by_____
 - A) Pulley rod
 - B) Cable
 - C) Rod
 - D) Bell crank
2. _____ is an aerial navigation system.
 - A) VHF
 - B) VHFVOR
 - C) ILS
 - D) APS
3. _____ is one in which wires carrying electrical signals from the pilots control replace mechanical linkages entirely.
 - A) Fly by wire
 - B) Autopilot
 - C) CCV
 - D) FDR
4. Landing gear, wing flaps, wheel brakes are commonly operated by_____.
 - A) Pneumatic
 - B) Hydraulic
 - C) Pump
 - D) All
5. If the selector valve is neutral in the hydraulic system, Movement of piston can be_____
 - A) Stop
 - B) Down
 - C) Up
 - D) Slow
6. _____ deicing system is used in piston engine aircraft or twin turbo propeller.
 - A) Thermal
 - B) Pneumatic
 - C) Electronic
 - D) All
7. _____ prevents the formation of ice on the airplane.
 - A) Anti icing
 - B) Deicing
 - C) Both
 - D) Heat icing
8. The air starter converts energy from compressed_____
 - A) Air to torque
 - B) Air to speed rate
 - C) Air to power
 - D) All
9. _____ provides the pilots with the start range distance between the airplane and a ground station.
 - A) DME
 - B) ADF
 - C) ILS
 - D) VOR
10. _____ is used to measure the pressure in reciprocating engine.
 - A) Bourdon tube
 - B) Manifold
 - C) Diaphragm
 - D) Capillary tube

PART B (10 x 2 = 20 Marks)

11. What is principle involved in VOR?
12. List out the pressure instruments and engine instruments.
13. Distinguish between hydraulic and Pneumatic systems.
14. What are the different types of shock absorbers used in landing gears?.
15. What are the advantages of air turbine starters?
16. Enumerate the lubricating systems used for jet engines.
17. What are the components of a simple vapour cycle system?
18. What are the cooling packs?
19. What is the principle involved in mach meter?
20. What is the function of tachometer?

PART C (5 x 14 = 70 Marks)

21. (a) Explain in detail, the working principle of power assisted and fully power assisted controls systems.

(OR)

(b) Write short notes on

(i) Push pull rod control system (7)

(ii) Fly by wire system (7)

22. (a) (i) Explain the typical pneumatic power system used in aircraft. (7)

(ii) Explain the procedure of shock absorber system. (7)

(OR)

(b) Explain with neat sketches, the working principle of hydraulic systems used in the modern aircraft.

23. (a) Explain with neat sketches, aircraft lubricating system operation for piston engine and jet engine.

(OR)

(b) Classify the different types of inertial starters used in reciprocating engine starting system. Explain the working principle of any two.

24. (a) Explain with neat sketches, the working principle of evaporative vapour cycle system and discuss its merits and demerits.

(OR)

(b) Explain the following with neat sketches

(i) Thermal anti icing system (7)

(ii) Pneumatic deicing system (7)

25. (a) Explain with neat sketches, the working principle of engine instruments. **(OR)**

(b) Write short notes on

(i) Pressure gauges (7)

(ii) Pitot static system (7)
