

B.E. DEGREE EXAMINATIONS: APRIL / MAY 2010

Fourth Semester

AERONAUTICAL ENGINEERING

U07AR402: Aircraft Systems and Instrumentations

Time: Three Hours

Maximum Marks: 100

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. Control system used in B747
 - (a) Push pull rod
 - (b) Wireless
 - (c) Power assisted
 - (d) Fly by wire
2. VOR means
 - (a) Visual Omni Range
 - (b) Vertical Omni Range
 - (c) VHF Omni Range
 - (d) None of these
3. RAT means
 - (a) Ram air temperature
 - (b) Ram atmospheric temperature
 - (c) Ram air turbine
 - (d) Rotary air turbine
4. Bleeding of brakes is done to
 - (a) Remove air from lines
 - (b) fading brakes
 - (c) Adjust brake travel
 - (d) Grabbing brakes
5. Gravity fuel system is suitable for
 - (a) Turbine engine
 - (b) Piston engine
 - (c) Rocket engine
 - (d) Ramjet engine
6. Ignitors are used in
 - (a) Turbine engine
 - (b) Piston engine
 - (c) Rocket engine
 - (d) Ramjet engine
7. A dump valve is used to release cabin pressure when the aircraft
 - (a) Lands
 - (b) Cruise
 - (c) Take off
 - (d) Climb
8. Cooling pack is used to remove.
 - (a) Excessive heat
 - (b) Excessive air
 - (c) Excessive moisture
 - (d) Excessive pressure
9. Vertical speed indicator indicates
 - (a) Cruise altitude
 - (b) Climbing rate
 - (c) Turn rate
 - (d) Bank rate
10. At sea level the standard pressure is
 - (a) 29.92 in Hg
 - (b) 20 in Hg
 - (c) 25 in Hg
 - (d) 50 in Hg

PART B (10 x 2 = 20 Marks)

11. What is the advantage of fly by wire system?
12. What is function of PFCU in aircraft hydraulic system?
13. Difference between hydraulic and pneumatic system?
14. What is the function of selector valve?
15. List out the different types of starting system used in jet engine?
16. Explain vapor lock in aircraft fuel system?
17. List down the methods of fire detection system?
18. What are the components of vapour cycle system?
19. Explain TAS and EAS?
20. Explain the working principle of an altimeter?

PART C (5 x 14 = 70 Marks)

21. (a) (i) Explain conventional, power assisted and fully powered flight control? (7)
(ii) What are the essential features of fly-by-wire system used in modern aircrafts? (7)

(OR)

- (b) Explain with a neat sketch Instrument landing system used in aircraft.

22. (a) (i) How are landing gears of aircraft classified? (4)
(ii) Explain typical landing gear system used in a modern aircraft? (10)

(OR)

- (b) Explain (i) Sequence valve operation (5)
(ii) Flow restrictor (4)
(iii) Shimmy damper (5)

23. (a) (i) Difference between fuel system of a piston engine and jet engine? (4)
(ii) Explain with a neat sketch fuel system of a jet engine? (10)

(OR)

(b) Explain with a neat sketch the working of high tension magneto ignition system used in aircraft piston engine.

24. (a) (i) Differentiate between deicing and anti icing? (4)

(ii) Explain deicing and anti icing methods used in an aircraft? (10)

(OR)

(b) (i) Explain with a neat sketch air cycle system of an aircraft? (10)

(ii) What is the need for pressurization system in an aircraft? (4)

25. (a) (i) Explain of working of gyroscopic instruments with suitable example? (8)

(ii) Distinguish between engine instruments and navigation instruments? (6)

(OR)

(b) Write short notes on: (i) Mach meter (4)

(ii) Heading indicator (5)

(iii) Pitot static system (5)
