

Question Paper Code : 20027

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023

Third Semester

Aeronautical Engineering

AE 3802 – AIRCRAFT SYSTEMS AND INSTRUMENTS

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List components installed in the aircraft pneumatic power system.
2. Differentiate between oleo pneumatic struts and spring oleo struts.
3. Define aileron differential control system.
4. Name any four modern control system of an airplane.
5. What is the principle of starter generator?
6. Write the requirements of jet engine lubrication system.
7. List smoke detection systems used in an aircraft.
8. Classify different types of oxygen system.
9. What is the principle of gyroscopic instruments?
10. How the altimeter is functioning in an aircraft.

PART B — (5 × 13 = 65 marks)

11. (a) Explain typical airplane hydraulic system components and its functions with a schematic diagram.

Or

- (b) Explain typical airplane pneumatic system components and its functions with a schematic diagram.

12. (a) Explain flexible push pull rod control system of a light weight aircraft.

Or

- (b) What is autopilot system? Explain its operation and merits.

13. (a) Explain the fuel system of a Boeing aircraft with a diagram.

Or

- (b) List the types of starter fitted in aircraft. Explain any two of them in detail.

14. (a) Draw a neat sketch of vapour cycle system and explain.

Or

- (b) List the types fire detection techniques and explain any two of them in detail.

15. (a) Explain working of an accelerometer and a capacitance type fuel level indicator.

Or

- (b) Explain working of Mach meter and Electrical type tachometer.

PART C — (1 × 15 = 15 marks)

16. (a) Why jet engine has pressurized lubrication system and to have higher capacity of scavenge pump than pressure pump? How do you monitor healthy functioning of the system?

Or

- (b) How do you do the grouping of instruments for a newly designed instrument panel of a typical aircraft and illustrate with examples.