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Reg. No. :

| Question Paper Code : 50078 |

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Fourth Semester

Aeronautical Engineering

AE 8402 – AIRCRAFT SYSTEMS AND INSTRUMENTS

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the basic elements of aircraft systems?

2. What is a hydraulic controller?

3. What are the two types of flight controls?

4. Explain the benefits of aircraft hydraulic Systems

5. How does a jet engine work?

6. What is the difference between fire alarm and smoke detector?

7. How does an air cycle system works?

8. Which refrigerant is used in aircraft?

9. What is an aircraft gyroscope?

10. How does an air speed indicator works?

PART B — (5 × 13 = 65 marks)

11. (a) (i) What is the pneumatic system of an aircraft and explain its significance in an aircraft?

    (ii) How does aircraft landing gear work?

Or

    (b) (i) Write a short note on small aircraft retraction systems.

    (ii) How does a hydraulic retractable landing gear work?

12. (a) (i) Write a short note on auto pilot system.

       (ii) What are the four major elements of an auto pilot system?

Or

    (b) (i) What is meant by push-pull rod aviation? What is the function of push-pull rod system?

       (ii) What is aircraft actuation system and why it is used in an aircraft?

13. (a) (i) Write a short note on aircraft fuel systems.

       (ii) Why do multi engine airplanes have fuel crossfeed systems?

Or

    (b) (i) What is meant by starting system in aircraft?

       (ii) How does an ignition system work in an aircraft?

14. (a) (i) Explain the vapor cycle cooling system used in aircraft with a neat illustration and also explain its working principle.

       (ii) Which refrigerant is used in vapour compression cycle?

Or

    (b) (i) What are the three types of oxygen systems?

       (ii) How do anti-icing system and de-icing system work in an aircraft?

15. (a) (i) Name the three instruments work by air pressure and explain in detail.

       (ii) Name the three instruments work by gyroscopes and explain in detail.

Or

    (b) (i) How do pilots tackle bad weather during flight?

       (ii) Write a short note on tachometers

PART C — (1 × 15 = 15 marks)

16. (a) Explain the working principle of aircraft control system.

Or

    (b) Describe on the six basic aircraft instruments in detail?

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