

Reg. No. :

Question Paper Code : 52526

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Fourth Semester

Aeronautical Engineering

AE 6402 — AIRCRAFT SYSTEMS AND INSTRUMENTS

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the need of accumulator in Hydraulic system?
2. Differentiate between 'Hydraulic system' and 'Pneumatic system'.
3. What do you mean by, 'active control technology'? Give examples.
4. Write short notes about 'fly by wire systems'.
5. What are the types of 'ignition systems'?
6. List out the requirements of 'lubricating oil'.
7. Give the functions of 'wind shield wiper'.
8. What is the need for pressurizing the aircraft cabin?
9. Define : TAS.
10. Distinguish between 'Engine instruments' and 'Navigation instruments'.

PART B — (5 × 13 = 65 marks)

11. (a) With the help of diagrams, explain the Instrument Landing system used in airplanes. (13)

Or

- (b) Explain with a neat sketch, the basic hydraulic system with Power driven Pump'. (13)

12. (a) Explain the principle and operation of 'autopilot system' with a neat sketch. (13)

Or

- (b) What are the functions of 'push pull rod' and; 'flexible push pull rod' system? (13)

13. (a) Describe the 'typical fuel system' used in the jet engine airplanes with a neat diagram. (13)

Or

- (b) Explain the working principle of a gas turbine engine 'Air starting system' with a neat sketch. (13)

14. (a) Describe in detail the working principles of 'De-icing system' and 'Anti-icing system used in an airplane. (13)

Or

- (b) With the help of diagrams, explain the working of 'electrical fire detection' and 'electrical smoke detection' systems used in airplanes. (13)

15. (a) Explain the various basic types of 'Gyroscopic instruments' used in airplanes. (13)

Or

- (b) Explain the following systems used in aircrafts :

(i) Mechanical Tachometer (7)

(ii) Air Speed Indicator. (6)

PART C — (1 × 15 = 15 marks)

16. (a) Design a suitable Lubrication system used in Small Piston Engine aircraft with neat sketch. (15)

Or

- (b) For a Small Business Jet aircraft, select the appropriate Flight control system and also justify your selection. (15)