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Question Paper Code : 91061

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fourth Semester
Aeronautical Engineering
AE 6402 – AIRCRAFT SYSTEMS AND INSTRUMENTS
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. List out the types of selector valves used in hydraulic systems.
2. What do you mean by anti-skid system ?
3. What are the flight control surfaces on an aircraft ?
4. What do you mean by active control technology ? Give at least three examples.
5. What are the primary requirements of a fuel system ?
6. Why lubricating system is necessary for an aircraft ?
7. Explain the principle involved in Systron-donner fire detection technique used in aircrafts.
8. What is the basic difference between anti-icing and de-icing systems ?
9. Define sensitivity and speed of response of an instrument.
10. Write down the working principles of gyroscopic instruments.

PART – B

(5×13=65 Marks)

11. a) Explain with neat sketches the working of the typical hydraulic system used for the Boeing 727 aircraft.
(OR)
- b) i) What are the components of the pneumatic system ? Explain with neat sketches a typical pneumatic power system used in aircraft power plants. (8)
- ii) What are the different types of landing gears used in aircraft ? (5)

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12. a) With neat illustrations, explain in detail about the working principle of power assisted and fully power assisted controls systems. (7)
- (OR)
- b) i) Explain in brief about the working principle and operation of autopilot system with neat sketches. (7)
- ii) Explain in brief about the various modern control systems. (6)
13. a) Explain the fuel system for Boeing 727 aircraft with a neat sketch. (8)
- (OR)
- b) i) Explain with neat sketches the working of any two gas turbine starters with neat sketches. (5)
- ii) Explain briefly about the types of lubrication oil system used in jet engine. (10)
14. a) i) Explain the working principle of evaporative vapour-cycle in detail with neat sketches. Also discuss its merits and demerits. (3)
- ii) Write short notes on cooling packs. (13)
- (OR)
- b) With neat sketches, explain in detail about the fire protection and smoke detection techniques used in aircrafts. (4)
15. a) Explain the working principle of following instruments with neat sketches : (4)
- i) Air speed indicator. (4)
- ii) Altimeter. (5)
- iii) Gyroscope. (13)
- (OR)
- b) What are the various types of engine instruments ? Briefly explain any two types in detail. (15 Marks)

PART - C

(1×15=15 Marks)

16. a) Explain the brake system for Boeing 757 airplane with neat sketches. (OR)
- b) With necessary sketches, discuss in detail about the cabin pressurization systems of modern aircrafts.