Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50023

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017

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. What are the advantages of pneumatic system over hydraulic system ?
2. What are the different types of shock absorbers used in landing gears ?
3. What are the flight control surfaces ?
4. Discuss about 'Q feel' equipped in power assisted flight control system.
5. What is vapour lock and list down its causes ?
6. Differentiate oil system of piston engines from jet engines.
7. What is the function of cabin air pressure safety valve ?
8. List out the different smoke detection techniques used in aircraft fire protection system.
9. What is meant by true altitude and absolute altitude ?
10. State the fundamental properties of a gyroscope.

PART – B (5×13=65 Marks)

11. a) What are the components of the pneumatic system ? Explain with neat sketches a typical Pneumatic power system used in aircraft power plants.

(OR)

b) Explain the functions of various components of a landing gear with suitable sketch.

12. a) Explain in detail the working principle of power assisted and fully power assisted controls systems ?

(OR)

b) i) Explain in detail the operation of FBW system and discuss its advantages. (8)

ii) Explain with a sketch the mechanical flight control system used in early airplanes. (5)

13. a) i) With neat sketches, discuss in detail about the lubricating system of a typical piston engine. (10)

ii) What are the essential properties of lubricating oils ? (3)

(OR)

b) Explain the working of battery ignition and magneto ignition systems with neat circuits.

14. a) What is the need for cabin air pressurisation ? Explain a typical air pressurisation system with pressurisation controller.

(OR)

b) Explain the following in detail.

i) Ventilation system. (7)

ii) Fire detection system. (6)

15. a) Explain the operation of following with neat sketches.

i) Pitot static system. (7)

ii) Gyroscopic instruments. (6)

(OR)

b) Write short notes on the following :

i) Mach meter. (7)

ii) Capacitor type fuel level indicator. (6)

PART – C (1×15=15 Marks)

16. a) With a neat sketch explain Boeing 757 hydraulic system in detail.

(OR)

b) With the help of a block diagram explain the autopilot system of a modern airplane.