AE3302 AIRCRAFT SYSTEMS AND INSTRUMENTS

IMPORTANT QUESTIONS

UNIT I AIRCRAFT SYSTEMS

2 - Mark

1. Distinguish between hydraulic and pneumatic systems.
2. Explain with a neat sketch, the basic hydraulic system with power driven Pump
3. Explain the working principle and operation of landing gear retraction system with neat sketch.
4. What is the function of shock absorber?

13 - Mark

1. Write a short note on speed brakes and spoilers.
2. Classify types of the retraction system.
3. Differentiate between 'Hydraulic system' and 'Pneumatic system'.
4. Explain the working principle of extension of landing gear system with a neat sketch.
5. With neat sketches, explain the types of shock absorbers used in Aircraft systems.

UNIT II AIRPLANE CONTROL SYSTEMS

2 - Mark

1. What do you understand by conventional system?
2. Explain in detail about the working and the advantage of powered Assisted Control System.
3. List out the components of digital fly by wire systems
4. Explain the principle and operation of 'autopilot system' with a neat sketch.

13 - Mark

1. Name any four basic control system components.
2. Mention a few advantages of FBW control systems over analog systems.
3. What is auto pilot system?

4. With neat sketch, explain operating principle of push rod system and explain the function of each components.
5. Explain the following with a neat sketch each:
   i. Auto-pilot system. ii. Active Control Technology

UNIT III ENGINE SYSTEMS

2 - Mark

1. Explain the lubrication system for a jet engine with neat sketch.
2. Explain the working principle of a gas turbine engine 'Air starting system' with a neat sketch.
3. What are the functions of a carburetor? In which way, aircraft piston engine carburetor is different from Automobile engine carburetor?
4. List out the requirement of a lubrication system used in aircraft engines.

13 - Mark

1. What is vapor lock?
2. Write about the crossfeed system and its significance in balancing.
3. List out the requirements of 'lubricating oil'.
4. Explain the working principle of gas turbine engine fuel system with neat sketch.
5. Explain the working principle of piston engine lubrication system with neat sketch.

UNIT IV AIRCONDITIONING AND PRESSURIZING SYSTEM

2 - Mark

1. List out the components of boot strap air cycle system.
2. Explain the air cycle cooling system and vapor-cycle cooling system of an aircraft with necessary diagrams.
3. Explain Boot strap air cycle system operation with neat sketches.
4. What do you understand by Anti-icing and De-icing systems?

13 - Mark

1. What are the primary components of the cooling pack?
2. Give the functions of 'wind shield wiper'.

3. What is 'Purging' the oxygen system?
4. Explain the working principle of basic air cycle system with a neat sketch.
5. Explain the following with a neat sketch each:

   i. Fire extinguishing system. ii. Smoke detection system.

UNIT V AIRCRAFT INSTRUMENTS 9

2 - Mark

1. What is the advantage of using Mach meter over air speed indicator?
2. List out the Gyroscopic instruments used in Aircrafts.
3. Explain the following air data system with a neat diagram:

   (i) Altimeter (ii) Airspeed indicators.
4. Explain the various types of 'Gyroscopic instruments' used in airplanes.

13 - Mark

1. What is TCAS?
2. State the importance of engine instruments.
3. What is the role of BITE in the aircraft maintenance process?
4. Explain the working principle of gyroscope instruments used in Aircrafts.
5. Explain the following with a neat sketch each:

   i. Altitude indicator. ii. Engine Instruments (any two).