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

Question Paper Code: 1106270

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV / DEC 2024
Sixth Semester
Aerospace Engineering
U20AS602 – FLIGHT SYSTEMS AND INSTRUMENTATION
(Regulation 2020)

Time: Three Hours | Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. What are the advantages of fly-by-wire flight control system?

2. Brief the push pull rod.

3. List out various types of hydraulic components used for Aircrafts.

4. What is the function of Hydraulic pump?

5. What are the major components of ignition system?

6. What is the role of a fuel selector valve in an aircraft's fuel system and how does it contribute to flight safety?

7. What is the key difference between a guided missile and a ballistic missile?

8. What is the main function of a gyroscope in a missile's control system?

9. What is the primary function of a spacecraft's structure?

10. What is the main difference between chemical and electric spacecraft propulsion systems?

PART – B (5 x 16 = 80 Marks)

11. (a) Describe in detail, how does a power-assisted flight control system function in a civil aircraft? (16)

(OR)

(b) Apply the concept of the fly-by-wire flight control system for Boeing 727 aircraft. (16)

12. (a) Describe the function of three of the following components in a landing gear system and explain how they contribute to a safe and successful landing: (16)

(i) Landing Gear Doors
(ii) Shock Absorbers
(iii) Nose Wheel Steering System

(OR)

(b) During a rocket launch, why is it important for the booster stage to separate from the main vehicle? (16)

13. (a) Explain Air starter motor system of aircraft engine starter system in detail. (16)

(OR)

(b) Explain the magneto Ignition system with a neat sketch. (16)

14. (a) (i) Explain the challenges of designing an airframe for high-speed and maneuverable flight. (8)

(ii) Discuss the materials used in modern missile airframes and their advantages. (8)

(OR)

(b) (i) Analyze the factors that influence the choice of a propulsion system for a specific missile application. (8)

(ii) Discuss the safety considerations associated with missile propulsion systems. (8)

15. (a) (i) Explain the purpose of a communication system on a spacecraft. (8)

(ii) Discuss the challenges of transmitting and receiving data signals over vast distances in space. (8)

(OR)

(b) Explain the importance of maintaining a precise attitude for various spacecraft operations. (16)

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