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# Question Paper Code: 1105162

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV/ DEC 2024
Fifth Semester
Aerospace Engineering
U20AS502 - SPACE PROPULSION
(Regulation 2020)

Time: Three Hours Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. List out the compression components in ramjet engine?

2. Why Supersonic Combustion is needed in hypersonic propulsion?

3. Define specific impulse.

4. Classify the igniters used in solid rocket propulsion.

5. What are the selection criteria for of liquid propellants?

6. Illustrate the liquid propellant tanks.

7. Compare the standard and reverse hybrid systems.

8. What are the application and limitations of hybrid rockets?

9. Explain the concept of laser propulsion system.

10. Write solar sail.

PART – B (5 x 16 = 80 Marks)

11. (a) Extend thermodynamic closed cycle with first law analysis. (16)

(OR)

(b) Explain with a neat sketch about scramjet Propulsion. (16)

12. (a) Illustrate and explain the solid propellant grain design configuration. (16)

(OR)

(b) Discuss the safety characteristics and hazards of solid propellant rockets. (16)

13. (a) Show the gas pressure feed system in liquid propellant rockets with a clear sketch. (16)

(OR)

(b) Identify the peculiar problems associated with the operation of cryogenic engines. (16)

14. (a) Explain the combustion mechanism in hybrid propellant rockets with a neat sketch. (16)

(OR)

(b) Summarize the combustion instability in hybrid rocket propulsion. (16)

15. (a) Extend the magneto plasma accelerators in electric propulsion. (16)

(OR)

(b) Infer the nuclear rocket with a neat sketch. (16)

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