

Code No: 58095

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year II Semester Examinations, July - 2019

LAUNCH VEHICLE AND MISSILE TECHNOLOGY

(Aeronautical Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Define Mission Profile. [2]
- b) Write about various roles of missile. [3]
- c) What is meant by propellant grain? [2]
- d) Mention types of nozzles used for rockets and missiles. [3]
- e) What are the different types of missiles? [2]
- f) Write a short note on drag estimation of missiles. [3]
- g) Write Tsiolkovsky rocket equation. [2]
- h) What is Thrust termination? [3]
- i) What are the tests made for rocket before it is in operational use. [2]
- j) What is micrometeorology? [3]

PART - B

(50 Marks)

2. Explain the effect of propulsion systems on vehicle performance and measurements.[10]
OR
3. Discuss briefly about similarities and differences in design, construction, operation of rockets and missiles. [10]
4. Explain about Liners, insulators and inhibitors- function, requirements in solid propellants. [10]
OR
5. Describe a typical liquid propellant engine with a sketch. Identify parts and their functions. [10]
6. Write briefly about airframe components of rockets and missiles with neat sketches.[10]
OR
7. What is rocket dispersion and explain the design considerations of re-entry vehicles.[10]
8. Discuss briefly about Earth launch trajectories- vertical segment, the gravity turn, constant pitch trajectory, orbital injection. [10]

OR

9. What is Thrust vector control and explain the techniques to control thrust with neat sketches? [10]

10. Write a short note on how computers are used in data handling of rocket testing. [10]

OR

11. Explain typical personnel and plant security or safety provisions in a modern test facility. [10]

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