

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3170104

Date:13-11-2025

Subject Name:Rocket and Missile Technology

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

| | MARKS |
|---|--------------|
| Q.1 (a) What are the different sections of missile? | 03 |
| (b) What do you mean by long range cruise trajectory? | 04 |
| (c) Explain monowing for maneuvering flight. | 07 |
| Q.2 (a) What is the difference between Rocket and Missile? | 03 |
| (b) Differentiate between liquid and solid propellants. | 04 |
| (c) Write a short note on Flat turns and pull-ups for maneuvering flight. | 07 |
| OR | |
| (c) What is drag? Explain different types of drag with equations | 07 |
| Q.3 (a) What are the different types of Hemispherical Forebodies? | 03 |
| (b) What are the various wing planforms of missiles? | 04 |
| (c) What are the methods for finding Missile Trajectories? | 07 |
| OR | |
| Q.3 (a) Classify the different types of missiles. | 03 |
| (b) Write a short note on Propellant tank outlet design with neat sketch. | 04 |
| (c) Draw and explain typical base Pressure vs Mach number graph. | 07 |
| Q.4 (a) What is outage of propellant loading? | 03 |
| (b) Discuss solid propellant Grain design. | 04 |
| (c) What is purpose propellant loading tolerance? Explain its major consideration | 07 |
| OR | |
| Q.4 (a) What are the disadvantages of Boattail? | 03 |
| (b) Explain Calibrated system outage control. | 04 |
| (c) Explain Ackeret/Linearized Theory. | 07 |
| Q.5 (a) List out good load controls for propellant loading tolerance. | 03 |
| (b) Define Aspect Ratio with appropriate sketches. | 04 |
| (c) Explain mass loading concept. | 07 |
| OR | |
| Q.5 (a) What are the different types of igniters? | 03 |
| (b) Explain the Subsonic characteristics of Airfoil. | 04 |
| (c) Explain volume loading concept. | 07 |
