

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3170104****Date:14/06/2022****Subject Name:Rocket and Missile Technology****Time:02:30 PM TO 05:00 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

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|------------|---|-----------|
| Q.1 | (a) What is outage of propellant loading? | 03 |
| | (b) Write a short note on Propellant tank outlet design with neat sketch. | 04 |
| | (c) Explain Solid propellant characteristics. | 07 |
| Q.2 | (a) List out good load controls for propellant loading tolerance. | 03 |
| | (b) What are the methods for finding Missile Trajectories? | 04 |
| | (c) What is drag? Explain different types of drag with equations | 07 |
| | OR | |
| | (c) Write a short note on Flat turns and pull-ups for maneuvering flight. | 07 |
| Q.3 | (a) What is Interference Drag? | 03 |
| | (b) Explain the Subsonic characteristics of Airfoil. | 04 |
| | (c) List out good load controls for propellant loading tolerance, and explain density variations. | 07 |
| | OR | |
| Q.3 | (a) What are the disadvantages of Boattail? | 03 |
| | (b) Write a short note on different Aerodynamic controls | 04 |
| | (c) Explain Ackeret/Linearized Theory. | 07 |
| Q.4 | (a) List different types of rockets. | 03 |
| | (b) Explain volume loading concept. | 04 |
| | (c) Explain Desirable physical properties for liquid propellant. | 07 |
| | OR | |
| Q.4 | (a) What are the different wing planforms? | 03 |
| | (b) Explain mass loading concept. | 04 |
| | (c) Write a short note on Propellant tank outlet design with neat sketch. | 07 |
| Q.5 | (a) Differentiate Liquid and Cryogenic propellants. | 03 |
| | (b) Write a short note on graphical method for determining boost glide trajectory. | 04 |
| | (c) Enumerate propellant tank outlet design with neat sketch. | 07 |
| | OR | |
| Q.5 | (a) What are the different types of igniters? | 03 |
| | (b) Explain Calibrated system outage control. | 04 |
| | (c) Define double base propellant. Write advantages and disadvantages for extruded and castable double-base propellant. | 07 |
