

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2170104****Date: 03/12/2019****Subject Name: Rocket & 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.

- Q.1** (a) What are the various types of propellants used for Rocket & Missile engines? **03**
(b) Write difference between flow past over Wedge & Cone. **04**
(c) Classify various types of Missiles on the basis of their purpose. **07**
- Q.2** (a) Classify different types of Missile noses. **03**
(b) Name the factors on which rockets are fully rely during flight. **04**
(c) Write a short note on Ogival forebody. **07**
- OR**
- (c) Write a short note on Conical forebody. **07**
- Q.3** (a) Write benefits of having blunt nose. **03**
(b) Write advantages and disadvantages of boat tail. **04**
(c) Write a short note on Graphical method used to determine missile/rocket trajectory. **07**
- OR**
- Q.3** (a) Compare pressure & drag distribution on conical & Ogival forebody. **03**
(b) What are the benefits of Mid sections? Explain Mid-section of missiles in brief. **04**
(c) What are the different types of Rocket/Missile forebodies? Explain hemispherical forebody with neat sketch. **07**
- Q.4** (a) What is nose fineness ratio? Explain steps to design Power series noses. **03**
(b) Define Outage. Explain Calibrated system outage control in brief. **04**
(c) List out Propellant ingredients for solid propellant and explain Inorganic oxidizers with appropriate examples. **07**
- OR**
- Q.4** (a) What are the different types of noses under hemispherical forebody? **03**
(b) What are Gelled propellants? What are their characteristics? **04**
(c) Explain Desirable physical properties for liquid propellant. **07**
- Q.5** (a) List out major considerations of good load controls for propellant loading tolerance. **03**
(b) Briefly explain Organic oxidizers for solid propellant. **04**
(c) Write a short note on Propellant tank outlet design with neat sketch. **07**
- OR**
- Q.5** (a) Define Density variations for Propellant loading tolerances. **03**
(b) Explain Tank Stretch and shrinkage. **04**
(c) Make a relation between mixture ratio loaded and mixture ratio burned. **07**
