

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020****Subject Code:2170104****Date:30/01/2021****Subject Name:Rocket & Missile Technology****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any **FOUR** questions out of **EIGHT** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
<b>Q.1</b>	(a) What is purpose of propellant inventory?	<b>03</b>
	(b) Explain different classes of missiles.	<b>04</b>
	(c) What is purpose propellant loading tolerance? Explain its major consideration.	<b>07</b>
<b>Q.2</b>	(a) What is wing control and tail control?	<b>03</b>
	(b) Enumerate total tank volume and ullage requirements.	<b>04</b>
	(c) Explain non usable and usable propellant.	<b>07</b>
<b>Q.3</b>	(a) Construct liquid propellant subsystem with its nomenclature.	<b>03</b>
	(b) Classify jet control types and its function.	<b>04</b>
	(c) What is mass loading concept? Explain in terms of change in outage for fuel and oxidizer variation.	<b>07</b>
<b>Q.4</b>	(a) What is random loading effects in propellant inventory?	<b>03</b>
	(b) Classify nose flap control and dorsal.	<b>04</b>
	(c) What is volume loading concept? Explain in terms of change in outage for fuel and oxidizer variation.	<b>07</b>
<b>Q.5</b>	(a) Explain maneuvering flights for pull ups.	<b>03</b>
	(b) Explain flow over wedge and cone forebody.	<b>04</b>
	(c) Illustrate solid propellant motor system with its advantages.	<b>07</b>
<b>Q.6</b>	(a) What is optimum bias? Explain with oxidizer and fuel outage slope.	<b>03</b>
	(b) Explain typical supersonic wing planform.	<b>04</b>
	(c) Illustrate liquid propellant motor system with its advantages.	<b>07</b>
<b>Q.7</b>	(a) Explain typical supersonic airfoil section.	<b>03</b>
	(b) List missile performance parameter. Explain any four.	<b>04</b>
	(c) Derive the magnitude of the velocity of propagation of pressure pulse line for valve closure.	<b>07</b>
<b>Q.8</b>	(a) Explain long range cruise trajectory.	<b>03</b>
	(b) Explain boost glide trajectory with graphical solution.	<b>04</b>
	(c) Explain feed line for valve opening with different parameters velocity, pressure, area and discharge coefficient through the fully opened valve.	<b>07</b>

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