

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII • EXAMINATION – WINTER 2013****Subject Code: 170104****Date: 28-11-2013****Subject Name: Rocket & Missile Configurations Design****Time: 10.30 AM - 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) Explain with neat sketch types of design and controls for rocket and missile. **07**  
(b) What is the volume concept and mass concept? Relationship between mixture ratio loaded and mixture ratio burned. **07**

- Q.2** (a) Explain with neat sketch pressure distribution over body for BOATTAIL. **07**  
(b) What is boost-Glide trajectory? Explain Graphical solution for boost-Glide trajectory with neat sketch. **07**

**OR**

- (b) What is friction drag? Write a short note on Boost-sustain trajectory. **07**

- Q.3** (a) Explain with neat sketch long-range cruise trajectory. **07**  
(b) Explain Flat turns and monowing for maneuvering flight. **07**

**OR**

- Q.3** (a) What is launch boundary in air launch of missile? Explain launch aircraft trajectory & missile trajectory and discuss how launch boundaries are determined from them? **07**  
(b) Enlist different parameters that can disperse flight path during boost phase and explain any two of them in detail. **07**

- Q.4** (a) Write solid propellant characteristics. **07**  
(b) Write a short note on Optimum Bias. **07**

**OR**

- Q.4** (a) What is geysering? Explain sequence of events for geysering cycle. **07**  
(b) Which are the desired physical properties of liquid propellant? **07**

- Q.5** (a) Explain liquid propellant combustion process and different zones of it. **07**  
(b) Explain Conical and ogival forebody. **07**

**OR**

- Q.5** (a) Explain with neat sketch principle elements of a liquid bipropellant rocket engine. **07**  
(b) Explain the effect of Aspect Ratio on the wing of missile. **07**

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