Code: 9A21606 **R09**

B.Tech III Year II Semester (R09) Supplementary Examinations May/June 2017

INTRODUCTION TO SPACE TECHNOLOGY

(Aeronautical Engineering)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 Write a note on the following:
   (a) Launch vehicles.
   (b) Space environment.

2 Write a short note on the following aspects related to liquid propellants:
   (a) Insulation cooling.
   (b) Regenerative cooling.
   (c) Transpiration cooling.
   (d) Boundary layer cooling.

3 With the help of a neat sketch, explain the basic principle of operation of an aerospace plane. Illustrate the major challenges or difficulties associated with the design of such an aerospace plane.

4 (a) Explain the ballistic orbital reentry process using neat sketch.
   (b) Describe the double dip reentry process with neat sketch.

5 Distinguish between circular and elliptical orbital motion of a body in a non rotating reference frame with its origin at another body.

6 Explain how a simple plane change maneuver is different form Hohmann transfer maneuver. Mention the changes that are going to be associated with orbital parameters in a simple plane change of orbits.

7 Explain about gravity gradient torque on satellite.

8 Explain various modes of satellite communication.

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