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10AE763

Seventh Semester B.E. Degree Examination, June/July 2019
Space Mechanics and Launch Vehicles

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Write short notes on Space Vehicles. **(06 Marks)**
b. Show that the transformation of Displacement and velocities with respect to co-ordinates derive and explain. **(14 Marks)**

2 a. Explain the two – Body problem in terms of resultant force? **(08 Marks)**
b. Derive the well – known Kelper equation for planetary motion. **(12 Marks)**

3 a. Write short notes on Ballistic Trajectory. **(10 Marks)**
b. What are Sun-synchronous and Geo – Synchronous orbits explain. **(10 Marks)**

4 a. Briefly explain Hohmann orbits. **(10 Marks)**
b. Discuss satellite perturbation. **(10 Marks)**

PART – B

5 a. Write short notes on :
i) Solid Rocket engine
ii) Liquid rocket engine
iii) Cryogenic Rocket engine. **(12 Marks)**
b. Describe comparison of liquid, solid and hybrid rockets. **(08 Marks)**

6 a. What are the typical criteria used in the selection of a particular rocket engines? Explain. **(10 Marks)**
b. Obtain the basic relations of motion for two-dimensional rocket motions in free space. **(10 Marks)**

7 a. What are the initial conditions at injection into orbit? Explain it with reference frame. **(10 Marks)**
b. With short notes on staging of rockets. **(10 Marks)**

8 Write short notes on :
a. Space craft
b. Manned and unmanned space mission
c. Space craft power generation
d. Selection of materials for space craft. **(20 Marks)**

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