Reg. No. : | | | | | | | | | | | | |

Question Paper Code : Q 2002

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Sixth Semester

Aeronautical Engineering

AE 1002 — SPACE MECHANICS

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is a solar system?

2. Define sidemeal day.

3. What is meant by geostationary satellite?

4. Explain the term 'sphere of influence'.

5. Distinguish between special and general perturbations.

6. Describe lander mission.

7. Draw the sketches of the four types of interplanetary trajectories.

8. Explain pate red conic method.

9. Discuss Hohmann trajectories.

10. Describe post-boost control system.

PART B — (6 × 16 = 90 marks)

11. (a) With the help of a sketch, explain the various concepts used to describe positions on earth and on the celestial sphere.

Or

(b) With aid of a diagram, describe the geocentric equatorial and ecliptic systems of coordinates.

12. (a) Explain the position of a bodies in the inertial reference frame XYZ.

Or

(b) Discuss the various orbital elements and the orientation of the orbital plane in the geocentric equatorial reference frame.

13. (a) Explain Encke's method for the computation of perturbed satellite orbits.

Or

(b) Discuss in detail the special and general perturbations.

14. (a) Describe the geometry of two-dimensional interplanetary trajectories.

Or

(b) Discuss three-dimensional interplanetary trajectories.

15. (a) Describe ballistic missile trajectory.

Or

(b) Write short notes on :

(i) The boost phase

(ii) Re-entry phase

(iii) Influence coefficients

(iv) Selection of space craft material.
