

BT-8/M-24

48312

SATELLITE COMMUNICATION

Paper-ECP-24A

Time Allowed : 3 Hours]

[Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT-I

1. (a) Discuss in detail the Kepler's 1st and 2nd laws of Orbital Mechanics. Draw diagrams where necessary.
- (b) The apogee and perigee distances of a satellite orbiting in an elliptical orbit are respectively 50,000 km and 8000 km. Determine the following:
 - (i) Semi-major axis of the elliptical orbit.
 - (ii) Orbit eccentricity.
 - (iii) Distance between the centre of the Earth and the centre of the elliptical orbit. 15
2. What are Look Angles? Derive the equation for the generation of Elevation angle. Also, discuss about subsatellite point. 15

UNIT-II

3. Discuss in detail TTC& M system with the help of a block diagram. 15
4. (a) Write a short on Power system of a Satellite System.
(b) What are Transponders? Discuss the working of Bent Pipe and double conversion Transponder. 15

UNIT-III

5. (a) Derive and explain the basic transmission theory using the link equation.
(b) Write the steps for Communication Link design procedure. 15
6. Derive the relation between system noise temperature and G/T ratio. Also, discuss the types of RF to IF conversion systems used in this using suitable diagrams. 15

UNIT-IV

7. Write short notes on the following :
(a) GPS (b) DBS-TV. 15
8. What are Multiple Access Techniques? Compare FDMA TDMA and DAMA techniques with necessary diagrams. 15