53 (EC 814) STCM

2013

(December)

SATELLITE COMMUNICATION

Paper : EC-814

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* State Kepler's laws of planetary motion and describe the orbit of a satellite. 3+7=10

   (b) Explain how elevation angle of a geostationary satellite can be determined. 7

   (c) What are the orbital effects in communication system performance ? 3

2. *(a)* Explain Attitude and orbit control system of a satellite. 10

(b) Explain reliability theory. How the reliability of a satellite can be enhanced by redundancy ? 7+3=10

3. (a) Explain the basic transmission theory of a satellite communication system. 10

(b) How system noise temperature can be calculated for a satellite communication system. 10

4. (a) How the third order intermodulation products are generated in FDMA ? 10

(b) With an example explain the spread spectrum transmission and reception. 10

5. (a) Explain the configuration of a Earth station receiver. 10

(b) Explain the different types of orbits for a non geostationary satellite. 10

6. (a) How coverage area of a satellite can be calculated ? Define instantaneous coverage and total coverage. 5+4=9

(b) Explain the GPS position location principle. 8

(c) What are the factors that influence the design of any satellite communication system ? 3

7. Write short notes on : 2×10=20

(a) GPS receiver

(b) Communication subsystem of a satellite.