

# CBCS SCHEME

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15EC755

## Seventh Semester B.E. Degree Examination, Jan./Feb.2021 Satellite Communication

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Describe Kepler's three law's and give relevant mathematical expressions. (10 Marks)  
b. Discuss the following parameters with reference to satellite orbits:  
(i) Apogee and Perigee (ii) Eccentricity (iii) Equinoxes and Solistics. (06 Marks)

OR

- 2 a. Explain orbital effects on satellites performance. (08 Marks)  
b. Explain Antenna look angles : (i) Azimuth angle (ii) Elevation angle. (08 Marks)

### Module-2

- 3 a. Describe TT and C subsystem with suitable diagrams. (10 Marks)  
b. Discuss in brief attitude and orbit control. (06 Marks)

OR

- 4 a. Explain in detail the types of Earth stations on the basis of services provided by them. (08 Marks)  
b. Discuss in brief Earth Station Architecture. (08 Marks)

### Module-3

- 5 a. Explain the concept of FDMA with suitable diagram. (08 Marks)  
b. Discuss in brief transmission path for SCPC systems. (08 Marks)

OR

- 6 a. Explain in brief satellite link parameters :  
(i) Choice of operating frequency.  
(ii) Propagation considerations. (08 Marks)  
b. Compute the free-space path loss in decibels for the following conditions:  
(i) For a path length of 10 km at 4 GHz operating frequency.  
(ii) Earth station transmitting antenna EIRP = 50 dBW, Satellite receiving antenna gain = 20 dB and received power at satellite = -120 dBW. (08 Marks)

### Module-4

- 7 a. Explain with a neat block diagram, basic elements of a satellite communication system. (08 Marks)  
b. Illustrate transparent transponders with suitable diagrams and explain performance parameters. (08 Marks)

OR

- 8 a. Discuss in brief advantages and disadvantages of satellites over Terrestrial networks. (08 Marks)  
b. Explain with a neat diagram, satellite point-to-point telephone networks. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

**Module-5**

- 9 a. Discuss in brief uplink section of satellite TV networks. (08 Marks)  
b. Explain in detail VSAT network topologies. (08 Marks)

**OR**

- 10 a. Discuss various types of sensors on board remote sensing satellites. (06 Marks)  
b. Discuss in brief image interpretation and application of remote sensing satellites. (12 Marks)

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