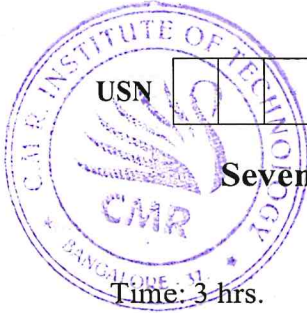


# CBGS SCHEME



USN

15EC755

## Seventh Semester B.E. Degree Examination, Aug./Sept. 2020 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. State and explain Kepler's law of planetary motion. (06 Marks)
- b. Explain phenomenon earth eclipse of satellite and fun transit outage. (06 Marks)
- c. The apogee and perigee distances of a satellite orbiting in an elliptical orbit are respectively 45,000 km and 7000 km determine : i) semi major axis ii) orbit eccentricity iii) distance between the centre of the earth and centre of elliptical orbit. (04 Marks)

OR

- 2 a. Explain injection velocity and resulting satellite trajectories with supporting expressions. (06 Marks)
- b. Explain ascending and descending nodes and equinoxes. (06 Marks)
- c. Explain Azimuth angle and elevation angle. (04 Marks)

### Module-2

- 3 a. Explain with neat schematic solar energy driven power system. (06 Marks)
- b. Briefly explain fixed satellite earth station and mobile satellite service earth station. (04 Marks)
- c. Explain with neat schematic tracking, telemetry and command subsystem. (06 Marks)

OR

- 4 a. Briefly explain altitude control and orbit control. (04 Marks)
- b. Explain earth station architecture with generalized earth station block diagram. (06 Marks)
- c. Explain monopulse tracking technique. (06 Marks)

### Module-3

- 5 a. Explain MCPC systems with neat diagram. (06 Marks)
- b. Derive expression for transmission equations. (06 Marks)
- c. Write a short note on Free-space loss. (04 Marks)

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OR

- 6 a. List advantages and disadvantages of TDMA over FDMA. (04 Marks)
- b. With neat schematic explain DS - CDMA transmission and reception. (06 Marks)
- c. Explain SDMA/FDMA system and SDMA/TDMA system with neat diagram. (06 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-4**

- 7 a. Explain two types of transponders. (06 Marks)  
b. Explain any six advantages of satellites over terrestrial networks. (04 Marks)  
c. With neat diagram, explain satellite cable television. (06 Marks)

**OR**

- 8 a. Explain basic elements of a satellite communication system with neat sketch. (06 Marks)  
b. Explain communication related applications of satellites. (04 Marks)  
c. Write a short note on mobile satellite technology. (06 Marks)

**Module-5**

- 9 a. Explain in detail classification of satellite remote sensing systems. (06 Marks)  
b. Write a short note on visible image and IR images. (06 Marks)  
c. Explain in brief weather forecasting satellites orbits. (04 Marks)

**OR**

- 10 a. List and explain applications of remote sensing satellites. (08 Marks)  
b. Explain working principle of GPS. (08 Marks)

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