



Seventh Semester B.E. Degree Examination, June/July 2024 Satellite Communication

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain Kepler's Laws of planetary motion. Also derive expression for orbital period. (08 Marks)
- b. With neat sketches, define :
- Apogee and perigee
 - Prograde and retrograde orbit
 - Inclination
 - Argument of perigee. (08 Marks)

OR

- 2 a. Explain briefly the following :
- Orbital perturbation (08 Marks)
 - Sun transit outage and Earth eclipse of satellite. (04 Marks)
- b. i) Define Azimuth and Elevation. (04 Marks)
- ii) An Earth station located at 30°W longitude and 60°N latitude. Determine look angle parameters with respect to GEO satellite located at 50°W longitude. The orbital radius is 42164km. (Assume radius of earth to be 6378km). (04 Marks)

Module-2

- 3 a. Explain basic block schematic arrangement of a regulated bus power supply system. (08 Marks)
- b. Explain TT and C subsystem with schematic block diagram. (08 Marks)

OR

- 4 a. Explain with neat block diagram earth station architecture. (08 Marks)
- b. Explain the tracking techniques used for satellite tracking. (08 Marks)

Module-3

- 5 a. Explain :
- Demand assigned FDMA (08 Marks)
 - Pre-assigned FDMA. (08 Marks)
- b. Explain general TDMA frame structure. (08 Marks)

OR

- 6 a. With usual notation, derive satellite transmission equation. (06 Marks)
- b. Discuss the parameters influence the design of satellite communication link. (10 Marks)

Module-4

- 7 a. Explain with neat block diagram basic elements of a satellite communication system. (08 Marks)
b. Mention the advantages and disadvantages of satellites over terrestrial networks. (08 Marks)

OR

- 8 a. Explain with neat block diagram satellite cable TV. (08 Marks)
b. Explain transparent or bent pipe transponder with neat block diagram. (08 Marks)

Module-5

- 9 a. What is Remote sensing satellite system? What are its applications? (08 Marks)
b. Classify satellite Remote sensing system on the basis of radiation and spectral region used for data acquisition, explain any one method. (08 Marks)

OR

- 10 a. Explain the working principles of Global Positioning Satellite (GPS) system. (06 Marks)
b. What are the Military and Civilian applications of satellite Navigation Systems? (05 Marks)
c. Explain the weather forecasting satellite payload. (05 Marks)

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