

**IV B. TECH I SEMESTER REGULAR EXAMINATIONS, NOVEMBER - 2023**  
**SATELLITE COMMUNICATIONS**  
**(ELECTRONICS AND COMMUNICATION ENGINEERING)**

Time: 3 hours

Max. Marks: 70

**Note : Answer ONE question from each unit (5 × 14 = 70 Marks)**

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UNIT-I

- 1. a) Demonstrate Kepler’s three laws of planetary motion. [7M]
- b) Describe various orbital parameters required to determine a satellite’s orbit. [7M]

(OR)

- 2. a) Explain the principle of launching and various satellite launch vehicles. [7M]
- b) Explain about orbital Perturbations. [7M]

UNIT-II

- 3. a) What are the various satellite subsystems? Explain TTC & M subsystem with a neat block diagram. [7M]
- b) Write short note on the equipment reliability. [7M]

(OR)

- 4. a) Explain the communication subsystem with satellite transponder channel. [7M]
- b) Discuss briefly about the space qualification. [7M]

UNIT-III

- 5. a) What is the effect of noise and interference on the performance of satellite. [7M]
- b) Derive the expression for C/N ratio of a satellite link. [7M]

(OR)

- 6. a) Discuss various modulation and multiplexing techniques used with satellite links. [7M]
- b) Explain the principle and advantages of CDMA technique. [7M]

UNIT-IV

- 7. a) Explain each block of the block diagram of Earth station subsystems. [7M]
- b) Write short note on Tracking Systems. [7M]

(OR)

8. a) Describe the DTH system with a block diagram. [7M]  
b) Distinguish the MATV and CATV systems. [7M]

UNIT-V

9. a) Compare and contrast Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) Satellite Systems. [7M]  
b) Explain about GPS navigation message. [7M]

(OR)

10. a) Describe the characteristics of INTELSAT and INSAT active satellites with a tabular column [7M]  
b) Explain the characteristics of Direct Broadcast Satellites (DBS). [7M]

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