Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

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M.Tech. (ECE) (Sem–2)

SATELLITE COMMUNICATION

Subject Code : MTEC-PE3A-18

M.Code : 76261

Date of Examination : 19-06-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

1. a) Explain the various frequency band allocations used for satellite services.

   b) What are different satellite systems? Explain.

2. a) Why the uplink frequency is always greater than the downlink frequency in satellite communication? Explain.

   b) Define three Keppler's laws of planetary motion.

3. a) Explain the working of telemetry, tracking, Command and monitoring sub system of a spacecraft.

   b) What are look angles? Explain with the help of neat diagrams.

4. a) What are the different antennas used on satellites? Explain with the help of typical satellite antenna patterns and coverage zones.

   b) Explain elevation angle and sun-synchronous orbit.

5. a) Explain the Altitude and Orbit Control System (AOCS) with necessary diagram.

   b) Draw the general configuration of an earth station and explain each block.

6. a) What is G/T ratio of a satellite link? Derive the expression for it.

   b) Explain the Doppler frequency shift phenomenon and derive the expression of Doppler shift in satellite communication.

7. a) Explain VSAT in detail.

   b) Explain briefly about the transmitters and receivers used in satellite earth station.

8. a) Draw the block diagram of GPS receiver and explain its operation.

   b) What are the different multiple access techniques use din satellite communication?