

(Following Roll No. to be filled by candidate)

Roll No.

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M TECH
THIRD SEMESTER EXAMINATION 2017-2018
DCE42
SATELLITE COMMUNICATION

Time: 3 Hours

Max. Marks: 100

Note:

- Attempt all questions.
- All questions are equal marks.
- All symbols have usual meaning.

1. Attempt any *two* of the following [2x10]

- a. State Kepler's laws of planetary motion. Explain their relevance to artificial satellites orbiting the earth.
- b. What are look angles and derive the expressions for azimuth and elevation?
- c. Write brief notes on the advantages and disadvantages of using satellite in LEOs, MEOs and GEOs for mobile satellite communications.

2. Attempt any *two* of the following [2x10]

- a. Explain the attitude control of satellite with necessary diagram.
- b. What do you understand by monitoring and control?
- c. With a neat sketch, explain Telemetry, Tracking and command subsystem.

3. Attempt any *two* of the following [2x10]

- a. With a neat sketch, explain the power budget for a satellite link considering back off and rain fade margin.
- b. A satellite transmits with EIRP of 46dBW. Calculate the received the carrier to noise ratio if bandwidth is 35MHz and receiver has a G/T of 25dB/K. Assume the distance between earth and the satellite is 35786km.
- c. Explain the calculation of combined uplink and downlink C/N ratio.

4. Attempt any *two* of the following [2x10]

- a. With a neat block diagram, explain the functioning of SPADE system.
- b. Explain the TDMA burst frame structure of satellite system with necessary diagrams
- c. Discuss the principles of CDMA. Explain the application of CDMA in satellite communication.

5. Attempt any *two* of the following

[2x10]

- a. Draw and explain the block diagram of earth station.
- b. With the help of block diagram describe the operation of VSAT system.
- c. Discuss in detail about Global Positioning Satellite System.