

Duration: 3 Hrs.

Marks: 80

NB:

**Q.1 is compulsory.**

**Solve any three from remaining five questions.**

**Assume suitable data wherever required.**

**Draw required diagrams neatly.**

**Q.1 Solve any Five:**

**20**

- Discuss the signification of Microwave frequency in Satellite communication.
- Explain different tests conducted for the selection of Satellite component.
- Explain why 14/12 GHz band is used for DTH application, what are the advantages and disadvantages of this band?
- Define and explain reliability in satellite.
- Explain AM/PM conversion.
- How does back off power affect satellite link performance?

**Q.2**

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- Give a detail comparison between low, medium and high attitude satellite.
- Discuss the effect of earth's oblateness, moon and sun on the orbit of satellite. Explain "Parking orbit".

**Q.3**

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- A carrier 6/4 GHz satellite uplink has the following data: Earth station EIRP = 80dBW; Earth station satellite distance = 35780 km; attenuation due to atmospheric factor = 2dB; satellite antenna efficiency = 0.8; satellite antenna's aperture area  $0.5\text{m}^2$ ; satellite receiver's effective noise temperature = 190K; satellite receiver band width = 20 MHz. Determine the link margin if the threshold value of received carrier to noise ratio is 25dB.
- Describe the significance of carrier to noise ratio, carrier to noise density ratio and bit energy to noise density ratio.

**Q.4**

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- What are the advantages and disadvantages of pre-assignment and demand assignment multiple access system? Explain how they are implemented in TDMA.
- Discuss FDMA-SCPC system.

**Q.5**

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- Discuss in brief the general configuration of earth station.
- Explain on-board connectivity with beam scanning.

**Q.6 Write short note on**

**20**

- OSI reference model for Satellite Network.
- Concept and need of Laser satellite system.
- Factor govern the design of Earth station.
- Major techniques of attitude control.

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