

Roll No.

Total No. of Questions : 09]

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B.Tech. (Sem. - 7th/8th)

SATELLITE COMMUNICATIONS
SUBJECT CODE : DE - 3.3 (Elective)

Paper ID : [A0336]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

Q1)

(10 × 2 = 20)

- a) Explain the transponder, forward link and reverse link.
- b) Discuss the advantages and disadvantages of non-linear amplifier.
- c) What are the differences between active and passive satellites?
- d) If the data is to be carried to 5000 km whether optical fiber or satellite is preferred for communication?
- e) Discuss the effect of orbital inclination.
- f) Explain the concept of frequency hopping.
- g) What parameters are to be considered for the design of downlink. Mention the parameters only.
- h) What are interference effects on complete link design equation?
- i) What do you mean by channel throughput? What is its significance?
- j) What do you mean by noise figure? What is its importance?

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Section - B

(4 × 5 = 20)

- Q2)** (a) Discuss the advantages of CDMA over TDMA and FDMA.
(b) How satellite switched TDMA helps to maintain network synchronization.
- Q3)** Explain optical fiber CATV system. Also explain block diagram of earth station.
- Q4)** Draw and explain the block diagram of earth station synchronization subsystem.
- Q5)** How direct to home TV broadcasting is achieved? Explain.
- Q6)** Discuss the application of satellite for weather forecasting, military applications. How satellite communication helps in scientific study? Explain.

Section - C

(2 × 10 = 20)

- Q7)** (a) Discuss the applications of demand assignment multiple access techniques.
(b) Discuss what you know about mobile satellite networks.
- Q8)** Write note on any two of the following:
(a) C/N and G/T ratio.
(b) Laser beam acquisition, tracking and pointing.
(c) VSAT.
(d) Satellite voice services.
- Q9)** Write note on any two of the following:
(a) Discuss the effects of rain, ice and carrier frequency on depolarization.
(b) Discuss the application of satellite for telephone services.
(c) Design the earth station using antenna. Discuss the application of satellite for telephone services.

