MODERN COMMUNICATION SYSTEMS

(Elective)

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *six* from the rest.

1. Answer any *five* of the following questions in brief.   5×2=10

    (a) Name any four applications of satellite.

    (b) Define bandwidth of a channel.

    (c) Name the two types of Packet Switching technique.

    (d) Define angle of inclination and angle of elevation.

    (e) What is a base station ?

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(f) Write two differences between asymmetric and symmetric key cryptography.

2. Name the two types of antenna used in satellite communication system with their respective diagrams. Discuss the basic requirements of an Earth Station Antenna. 4+6=10

3. Why do modems use compression schemes ? Discuss any four basic compression techniques used in modems. 2+8=10

4. Define plain text, cipher text cipher and snooping. Mention any three simple ciphers and describe each of them briefly. 4+6=10

5. Define signal-to-noise ratio. If the power of a signal is 10 mW and that of noise is $1\,\mu$W, find the values of SNR and SNR in decibels. Consider a telephone channel of bandwidth 3000 Hz assigned for data communications. Find the capacity of the channel if SNR is 3162. 2+4+4=10

6. Explain the general principles of circuit switching and virtual circuit switching techniques. 5+5=10

7. What do you mean by Frequency Division Duplexing (FDD) and Time Division Duplexing (TDD) ? Discuss the concept of frequency reuse in cellular telephony with the help of a diagram.

4+6=10

8. Write short notes on any *two* :   5+5=10

   (a) ISDN

   (b) GSM architecture

   (c) Digital signature

   (d) Message switching.