2026

ELECTRONICS — MINOR

Paper : MN-4

(Electronics Communication)

Full Marks : 75

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Unit - I

1. Answer ***any ten*** questions : 2×10

   (a) What is the need for modulation in communication systems?

   (b) Why QPSK is better than PSK?

   (c) Define modulation index for frequency modulation.

   (d) What do you mean by roaming in mobile communication?

   (e) What do you mean by frequency reuse in cellular communication?

   (f) What do you mean by Nyquist rate and Nyquist interval?

   (g) What are the advantages of digital communication?

   (h) What are the advantages of 5G over 4G in cellular communication systems?

   (i) What are the single polarity and double polarity PAM systems?

   (j) What do you mean by base band signal and carrier signal?

   (k) Differentiate between simplex and full duplex transmission modes.

   (l) What is thermal noise?

Unit - II

Answer ***any three*** questions.

2. (a) Define cellular communication.

   (b) Define a cell.

   (c) What is the role of a base station? 1+1+3

3. Give the block diagram of an FM transmitter and state the function of the blocks. 2+3

4. (a) Draw the waveform of an ASK signal.
   (b) What are the advantages and disadvantages of ASK? 2+3

5. Describe PAM, PWM and PPM with suitable waveforms. 5

6. What is sampling theorem in electronic communication? Explain its significance. 2+3

Unit - III

Answer ***any four*** questions.

7. (a) What is amplitude modulation? Find the expression for AM wave in terms of carrier and two side-band frequencies.
   (b) Draw the block diagram of a balanced modulator.
   (c) Compare AM and FM systems. (2+3)+3+2

8. (a) Explain Time Division Multiplexing Method (TDM).
   (b) What are the limitations of TDM?
   (c) Write down the applications of TDM.
   (d) What is the difference between TDM and FDM? 3+2+3+2

9. (a) What is noise?
   (b) What is signal to noise ratio?
   (c) Define bit rate and baud rate.
   (d) What is the difference between FSK and PSK? 2+3+3+2

10. (a) What are the advantages and disadvantages of a PCM system?
    (b) What are quantization error and quantization noise?
    (c) What is cross talk? 4+4+2

11. (a) Explain the principle of BPSK modulation with waveform.
    (b) Explain QPSK with suitable constellation diagram.
    (c) State the advantages of QPSK over BPSK. 4+3+3

12. (a) Describe the different modes of radio wave propagation.
    (b) Explain maximum usable frequency, skip distance and handoff. 4+(2+2+2)