

CBCS SCHEME

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21MT72

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Communication Systems

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. List all the existing communication systems used in everyday life. Categorize them as wired and wireless systems along with their applications. (10 Marks)
- b. Distinguish between half duplex and full duplex modes of transmission with examples. (10 Marks)

OR

- 2 a. What is meant by channel as applied to communication system? Explain different possible channels in a communication system. (10 Marks)
- b. Explain the basic signal processing involved in a digital communication system with the help of a block diagram. (10 Marks)

Module-2

- 3 a. Draw the schematic diagram of VSB modulator and explain. (10 Marks)
- b. Draw a neat diagram of amplitude modulated wave and derive an expression for modulation index. (10 Marks)

OR

- 4 a. Draw the schematic diagram of NBFM generation and explain. (10 Marks)
- b. Derive the time-domain expression of a single-tone frequency modulated signal. (10 Marks)

Module-3

- 5 a. Explain how PPM and PWM signals can be generated from PAM signals. (10 Marks)
- b. With neat diagrams, explain the operation of DPCM. (10 Marks)

OR

- 6 a. Explain quantizing process. What is meant by quantization range and quantization error? (10 Marks)
- b. Describe briefly the functions of each block in a PCM system. (10 Marks)

Module-4

- 7 a. What is the difference between FSK, MSK and GMSK digital modulation techniques? (10 Marks)
- b. What is meant by carrier recovery? What is the purpose of a clock recovery circuit, and when is it used? (10 Marks)

OR

- 8 a. Discuss the effects of imperfect phase and bit synchronization on the probability of error of a QPSK signal. (10 Marks)
- b. Explain M-array. What are the relationship bits per second and bound for a QPSK system? (10 Marks)

Module-5

- 9 a. What are the additional features which the next-generation wireless network is likely to have over and above the present 3G wireless technologies? (10 Marks)
- b. How is a 3G wireless network different from a 2G CDMA network? (10 Marks)

OR

- 10 a. Describe briefly the principle of frequency reuse in the context or a cellular network can the same frequency be repeated within a cluster. (10 Marks)
- b. Define co-channel cell and adjacent channel cell. Mark the frequency channel groups in an illustration of a fully equipped first tier regular hexagonal geometrical pattern based on 4-cell cluster. (10 Marks)

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