CBCS SCHEME

Eighth Semester B.E. Degree Examination, Feb./Mar.2022
Communication System

Time: 3 hrs.   Max. Marks: 80

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

Module-1

1   a. Explain the different blocks in general communication system with neat diagram. **(08 Marks)**
    b. Define modulation and explain the need for modulation. **(08 Marks)**

OR

2   a. With neat block diagram, explain the basic signal processing operations in digital communication. **(08 Marks)**
    b. Define sampling and explain the sampling theorem in detail. **(08 Marks)**

Module-2

3   a. Define amplitude modulation and derive the expressions for band width and power of AM wave. **(08 Marks)**
    b. Explain the following AM modulator with neat block diagrams:
       (i)   Square law modulator
       (ii) Switching modulator **(08 Marks)**

OR

4   a. Explain the following DSBSC modulator: (i) Balanced modulator (ii) Ring modulators. **(08 Marks)**
    b. Explain the following DSBSC demodulators:
       (i)   Coherent detection.
       (ii) Costasloop. **(08 Marks)**

Module-3

5   a. Define frequency modulation and derive the expression for frequency modulated wave and its modulation index. **(08 Marks)**
    b. Explain the generation of Narrow band FM using the block diagram. **(08 Marks)**

OR

6   a. Explain the FM demodulation using phase locked loop. **(08 Marks)**
    b. An FM wave is given by,
       $$S(t) = 20\cos\left(8\pi \times 10^6\, t + 9\sin\left(2\pi \times 10^3\, t\right)\right)$$
       Calculate frequency deviation, bandwidth and power of FM wave. **(08 Marks)**

Module-4

7   a. Explain the pulse code modulation with neat block diagram. **(08 Marks)**
    b. Explain the differential pulse code modulation with the help of transmitter and receiver sections. **(08 Marks)**

OR

8 a. Explain the delta modulation and demodulation with neat block diagrams. (08 Marks)
   b. Draw the signaling for the data 101001110 using polar, unipolar, bipolar, RZ and NRZ codings. (08 Marks)

Module-5

9 a. Explain the direct sequence spread spectrum encoder and decoder with neat block diagram. (08 Marks)
   b. Explain the frequency hopping spread spectrum using neat block diagram. (08 Marks)

OR

10 a. Explain Time Division and Frequency division multiplexing with neat diagram. (08 Marks)
    b. Explain T_1 carrier system. (08 Marks)

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