USN [   ]

Eighth Semester B.E. Degree Examination, July/August 2022
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. Explain function of General Communication System, with neat block diagram. **(10 Marks)**
   b. Define Modulation and classify it. Explain the need for modulation. **(10 Marks)**

OR

2 a. Explain the basic Elements in Digital Communication System with a neat block diagram. **(10 Marks)**
   b. Define Sampling theorem and explain different types of Samplings with necessary diagrams. **(10 Marks)**

Module-2

3 a. Explain the following Amplitude modulators :
       i) Square law modulator   ii) Switching modulator. **(10 Marks)**
   b. A modulating signal of frequency 5KHz and peak voltage of 6V is used to modulate a carrier of frequency 10MHz and Peak voltage of 10V, determine Modulation index , Frequency of LSB and USB , Amplitudes of LSB and USB. **(10 Marks)**

OR

4 a. Explain the following DSBSC modulators :
       i) Balanced modulator   ii) Ring modulator. **(10 Marks)**
   b. Explain the following DSBSC demodulators :
       i) Coherent Detection   ii) Costas Loop. **(10 Marks)**

Module-3

5 a. Explain Frequency Modulation and derive the Mathematical expression for Frequency Modulated Wave. **(10 Marks)**
   b. Explain the different types of Wideband FM Generation Method. **(10 Marks)**

OR

6 a. Explain the FM demodulation using Phase locked loop. **(10 Marks)**
   b. A FM wave is represented by the following equation $V = 10 \sin(5 \times 10^8 t + 4 \sin 1250 t)$.
       Find i) Carrier and modulating frequencies.
       ii) Modulation index and maximum deviation.
       iii) The power dissipated by this FM wave in 5Ω Resists. **(10 Marks)**

Module-4

7 a. Explain the Basic elements of Pulse Code Modulation. **(10 Marks)**
   b. Explain the Differential PCM using transmitter and receiver. **(10 Marks)**

OR

8 a. Explain the Delta Modulation using encoder and decoder. **(10 Marks)**
   b. For the input signal 101001110, draw the polar , unipolar and bipolar line codes. **(10 Marks)**

Module-5

9 a. Explain the Direct Sequence Spread Spectrum Modulation and demodulation with the help of neat diagram. **(10 Marks)**
   b. Explain the Frequency Hopping Spread Spectrum with the help of block diagram and Frequency Hopping diagram. **(10 Marks)**

OR

10 a. Explain the different types of Time Division Multiplexing with neat diagrams. **(10 Marks)**
   b. Explain the Frequency Division Multiplexing. **(04 Marks)**
   c. Explain the TI carrier system, with neat block diagram. **(06 Marks)**

* * * * *