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**17MT82**

# Eighth Semester B.E. Degree Examination, July/August 2021
## Communication System

Time: 3 hrs.

Max. Marks:100

### Note: *Answer any FIVE full questions.*

1 a. Explain in detail, with neat diagram the elements of communication system. **(10 Marks)**
  b. Define modulation. Explain the need for modulation in various applications and also mention the types of modulation. **(10 Marks)**

2 a. State and derive equation for ideal sampling with spectrum sketch. **(10 Marks)**
  b. Explain with neat block diagram, basic signal processing operations in digital communication system. **(10 Marks)**

3 a. Define amplitude modulation. Explain how square law modulator generates an AM wave. **(10 Marks)**
  b. Explain with circuit diagram and waveform envelope detector and also mention advantages and disadvantages of AM wave. **(10 Marks)**

4 a. Explain with neat circuit diagram and waveform, ring modulator for generating DSBSC wave. **(12 Marks)**
  b. Explain with diagram costas receiver for demodulating DSBSC wave. **(08 Marks)**

5 a. Define frequency modulation? Derive an expression for FM wave and sketch the FM waveform. **(10 Marks)**
  b. Explain with block diagram, indirect method of generating FM wave. **(10 Marks)**

6 a. Explain linear model of Phase Locked Loop (PLL). **(10 Marks)**
  b. Explain with diagram FM stereo multiplexing. **(10 Marks)**

7 a. Explain Time Division Multiplexing (TDM) systems. **(10 Marks)**
  b. Explain with block diagram Pulse Code Modulation (PCM) system, **(10 Marks)**

8 a. Explain with diagram delta modulation system and its draw backs. **(10 Marks)**
  b. What is line coding techniques? Sketch :
     i)   NRZ (Unipolar, Polar, Bipolar)
     ii)  RZ (Unipolar, Polar, Bipolar)
     iii) Manchester format
     For the given data 101110010. **(10 Marks)**

9 a. State and verify with example the properties of PN sequence. **(10 Marks)**
  b. Explain with block diagram, the principle of direct sequence spread spectrum. **(10 Marks)**

10 a. With neat diagram explain, frequency hop spread spectrum (M – FSK FHSS) system. **(10 Marks)**
   b. Explain $T_1$ carrier system. **(10 Marks)**

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