

# CBCS SCHEME

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## Eighth Semester B.E. Degree Examination, July/August 2022 Communication System

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- a. With neat block diagram, explain the each element of a Communication System. (08 Marks)
- b. Define Modulation. Explain the need for Modulation in various applications. (08 Marks)

OR

- a. With the neat block diagram, explain the Digital Communication System. (06 Marks)
- b. Derive an equation for Sampling theorem. (10 Marks)

### Module-2

- a. With necessary equation and diagram, explain the AM in time domain. (08 Marks)
- b. Define Amplitude Modulation. Explain and analyze how the square law modulator generates an AM wave. (08 Marks)

OR

- a. Give the comparison of various Modulation techniques. (04 Marks)
- b. With neat diagram and waveform and necessary equations, explain the Envelop detector. (06 Marks)
- c. Explain Ring Modulator with the neat diagram and waveform. (06 Marks)

### Module-3

- a. Explain the properties of Angle Modulated wave. (05 Marks)
- b. With relevant block diagram and equations, explain Linear Model of PLL. (06 Marks)
- c. Explain indirect FM as generation of FM waves. (05 Marks)

OR

- a. Explain the Non-linear model of PLL. (08 Marks)
- b. Explain the Non-linear effects in FM systems. (04 Marks)
- c. Explain Demodulation of FM waves. (04 Marks)

### Module-4

- a. Derive an expression for signal to quantization noise ratio for Delta modulation. Assume that no slope overload distortion. (05 Marks)
- b. With the necessary diagram, explain TDM. (05 Marks)
- c. Consider a sine wave of frequency 'fm' and amplitude 'Am' applied to delta modulation of stip size  $\delta$ . Show that, the slope overload distortion occur if  $Am > \frac{\delta}{2\pi f_m T_s}$ . (06 Marks)

OR

- a. Give the comparison of Digital Pulse Modulation methods. (08 Marks)
- b. Explain Polar and Unipolar RZ and NRZ. (08 Marks)

**Module-5**

- 9 a. Explain the generation of Pseudo Noise sequences, with the help of Feedback Shift Register. (08 Marks)  
b. Explain Direct Sequences Spread Spectrum with coherent binary PSK using a neat diagram. (08 Marks)
- OR**
- 10 a. Explain Frequency Hop Spread M-ary frequency shift keying, with neat diagrams. (08 Marks)  
b. Write the classification of Multiplexers. Explain FDM, with neat figure. (08 Marks)

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