

--	--	--	--	--	--	--	--	--	--

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

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. With a neat block diagram, explain communication system. (06 Marks)
- b. Write a note on different channels used in communication. (10 Marks)
- c. Define : i) B.W ii) Sampling theorem. (04 Marks)

**OR**

- 2 a. Define Modulation. Explain the need for modulation. (06 Marks)
- b. Find the Fourier transform spectrum for i)  $m(t) \cos 2\pi f_c t$  ii)  $\sin 2\pi f_c t$  (10 Marks)
- c. Give difference between Analog and digital communication system. (04 Marks)

### Module-2

- 3 a. Derive time and frequency domain equation for amplitude modulation and also derive modulation index and efficiency. (10 Marks)
- b. Explain square modulator to generate amplitude modulation signal. (10 Marks)

**OR**

- 4 a. Explain the generation of DSBSC using ring modulator. (08 Marks)
- b. Explain detection of DSBSC using i) Envelope detector ii) Costas Receiver. (12 Marks)

### Module-3

- 5 a. Derive time domain and frequency domain equation for NBFM. (10 Marks)
- b. Explain the generation of FM using indirect method. (10 Marks)

**OR**

- 6 a. Explain in detail the detection of FM signal using PLL. (12 Marks)
- b. Write a note on non-linear effect in FM system. (08 Marks)

### Module-4

- 7 a. Write a note a PCM transmitter, Receiver and Regenerative repeaters. (10 Marks)
- b. Derive  $[SNR]_Q = 4.8 + 6N$ . (10 Marks)

**OR**

- 8 a. Write a note on TDM [Time Division Multiplexing]. (08 Marks)
- b. Write a note on : i) Robust quantization ii) Line codes [RZ and NRZ unipolar and polar]. (12 Marks)

### Module-5

- 9 a. Write a note on frequency hop spread spectrum. (10 Marks)
- b. Write a note on FDM, TDM. (10 Marks)

**OR**

- 10 a. Write a note on DSSS. (10 Marks)
- b. Write a note on : i) Pseudo noise sequences ii) TI carrier system. (10 Marks)