

4E1230

Roll No. _____

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B. Tech. IV-Sem. (Back) Exam., Oct.-Nov. - 2020

Information Technology

4IT3 – 04 Principle of Communication

Time: 2 Hours

Maximum Marks: 82

Min. Passing Marks: 29

Instructions to Candidates:

Attempt all ten questions from Part A, four questions out of seven questions from Part B and two questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

PART – A

(Answer should be given up to 25 words only)

[10×2=20]

All questions are compulsory

Q.1 What is Noise?

Q.2 Define Amplitude modulation.

Q.3 What are different types of degrees of modulation?

Q.4 List out the applications of SSB- SC AM.

Q.5 What is Linear modulation?

Q.6 List the advantages of QPSK.

Q.7 What is meant by MSK?

Q.8 What is need of error control coding?

Q.9 What is PAM?

Q.10 What is aliasing?

PART - B

(Analytical/Problem solving questions)

[4×8=32]

Attempt any four questions

- Q.1 Draw and explain PWM and PPM waveforms in detail. [8]
- Q.2 (a) Define and explain Nyquist sampling theorem. [4]
(b) How quantization noise can be reduced in PCM? [4]
- Q.3 (a) What is the meaning of forward error correction? [4]
(b) State and explain the advantages of digital transmission. [4]
- Q.4 Explain pre - emphasis and de-emphasis in frequency modulation. [8]
- Q.5 Explain the generation and Reconstruction of Pulse code modulation signal with the help of appropriate diagrams. [8]
- Q.6 Explain Frequency - Hopping Spread Spectrum in detail. [8]
- Q.7 Explain the concept of Line Coding and Inter Symbol Interference. [8]

PART - C

(Descriptive/Analytical/Problem Solving/Design Questions)

[2×15=30]

Attempt any two questions

- Q.1 What is frequency translation? Explain DSBSC and SSB in time and frequency domains. [15]
- Q.2 Differentiate PAM, PWM and PPM modulation schemes in detail. [15]
- Q.3 (a) State the Sampling theorem. Obtain the expression for the spectrum of an ideally sampled signal and plot the spectrum for an arbitrary signal. [8]
(b) What is Quantization process? Explain different types of Quantization with their input and output characteristics. [7]
- Q.4 (a) Represent the binary data 10011101 in polar NRZ and bipolar RZ formatting. [7]
(b) Explain Nyquist Criterion for distortion free base band transmission in detail. [8]
- Q.5 (a) With the help of linear model of phase locked loop, obtain the output expression for demodulation of FM signals. [9]
(b) Write short note on CDMA. [6]