

4E1330

Roll No. 20EMBI T001

Total No. of Pages: 2

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B. Tech. IV - Sem. (Main) Exam., - 2022

Information Technology

4IT3 - 04 Principle of Communication

Time: 3 Hours

Maximum Marks: 70

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three 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 Give any two advantages of FM and AM. 1
- Q.2 Discuss frequency division multiplexing (FDM). 1½
- Q.3 State Shannon's theorem.
- Q.4 Draw the block diagram of communication system. 1
- Q.5 Draw the Phasor diagram of QPSK. 1
- Q.6 What is the need for modulation? 1½
- Q.7 What is the need for pre emphasis and de-emphasis? 1½
- Q.8 Explain T-1 carrier system.
- Q.9 What is sampling? State Nyquist Theorem? 2
- Q.10 What is the function of demodulator? 1½

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PART – B

(Analytical/Problem solving questions)

[5×4=20]

Attempt any five questions (Word limit 100)

Q.1 Compare FDMA, TDMA & CDMA.

Q.2 What is the principle of BPSK modem? Draw the output wave forms for sending data 10101110 using BPSK module? 3

Q.3 Derive the equations of AM & FM and also deduce the relation for carrier and sideband power.

Q.4 Briefly explain TDM-PAM system. 3 1/2

Q.5 Compare the Analog Communication Systems with Digital Communication Systems. 2

Q.6 What is quantization? Derive an expression for signal to quantization noise ratio in PCM. 3

Q.7 State and explain the types of spread spectrum techniques. 3 1/2

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions)

[3×10=30]

Attempt any three questions

Q.1 Draw the block diagrams of DSSS and FHSS systems and explain the working. Calculate the signal-to-noise ratio for both systems. 8

Q.2 Discuss the advantages and disadvantages of pulse modulation as compared to continuous wave modulation with neat sketches of waveforms discuss the generation and demodulation of PDM/PWN and PPM.

Q.3 Draw the block diagram of ADM and explain its working and compare it with DM. explain the terms slope overload and granular noise in Delta modulation. 6

Q.4 Explain with the help of block diagrams, the working of the QPSK transmitter and receiver. 5

Q.5 Draw the block diagram of the Superheterodyne receiver and explain the function of each block.

