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Barasat, Kolkata -700125

Term End Examination 2025-2026
Programme – Dip.EE-2023
Course Name – Communication Technologies
Course Code - DEEPE501B
(Semester V)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) A carrier is simultaneously modulated by two sine waves with modulation indices of 0.3 and 0.4. Calculate the total modulation index.

a) 0.707 b) 0.5
c) 1 d) none of these

(ii) Give example in the VSB system-

a) picture and sound carrier are transmitted b) only sound carrier is transmitted
c) only picture carrier is transmitted d) none of these

(iii) Indicate data transmitted for a given amount of time is called

a) Noise b) Power
c) Frequency d) Bandwidth

(iv) Select from which Amplitude Modulation suffers.

a) Side-band Suppression b) Intra pulse Modulation
c) Cross Modulation d) Carrier Suppression

(v) Medium which sends information from source to receiver is called _____.

a) Transmitter b) Transducer
c) Loudspeaker d) Channel

(vi) Select the form using that telephones send information through wires.

a) radio signals b) electrical signal
c) electromagnetic waves d) microwaves

(vii) Which device is used for tuning the receiver according to incoming signal (especially in TV)?

a) Low pass filter b) High pass filter
c) Zener diode d) Varacter diode

(viii) Give the name where Modulation is done.

a) Receiver b) Transducer

c) Between transmitter and radio receiver d) Transmitter

(ix) Define Square Law modulators.

a) used for frequency modulation b) used for pulse width modulation
c) used for amplitude modulation d) used for phase modulation

(x) Choose the role of transmitter in communication system.

a) to decode a signal to be transmitted b) to convert one form of energy into other
c) to detect and amplify information signal from the carrier d) to produce radio waves to transmit data

(xi) Define envelope detector.

a) Synchronous detector b) Asynchronous detector
c) Product demodulator d) Coherent modulator

(xii) Which of the following is not a part of analogue communication?

a) PPM b) PCM
c) AM d) PWM

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(xiii) Select the purpose of line coding.

a) Synchronization b) Signal Shape
c) Noise Addition d) Multiplexing

(xiv) Identify the coherent modulation.

a) coherent Binary Modulation b) non-coherent Binary Modulation
c) ASK d) FSK

(xv) Select the modulation with lowest bandwidth.

a) BPSK b) QPSK
c) ASK d) FSK

Group-B

(Short Answer Type Questions) 3 x 5=15

2. The peak to peak value of an AM voltage has a maximum value of 4V and a minimum value of 1V. Find the percentage of modulation. (3)

3. Explain the purpose of sampling in signal processing. (3)
4. Describe the concept of QPSK. (3)
5. Demonstrate the process of BPSK generation. (3)
6. State and explain Carson's rule. (3)

OR

Compare and contrast AM and FM system. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. What are the different kinds of AM? (5)

8. Compare AM with DSB-SC and SSB-SC. (5)

9. What is bandwidth? How can it be calculated in case of AM. (5)

10. Draw the block diagram of communication system and explain the function of each block. (5)

11. List and define ASK, FSK, and PSK with diagrams. (5)

12. Analyze the advantages of adaptive delta modulation over delta modulation. (5)

OR

Analyze the differences in constellation diagrams of BPSK and QPSK. (5)

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