Total No. of Questions : 8]

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S.E. (Electronics/E&TC/E&CE) PRINCIPLES OF COMMUNICATION SYSTEMS (2019 Pattern) (Semester - IV) (204193)

Time : 2 ¹/₂ Hours] Instructions to the candidates: [Max. Marks : 70

- 1) Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Assume suitable data if necessary.

Q1) a) Define Angle modulation. Describe with block diagram relationship between Phase modulation & frequency modulation. [6]

- b) The equation for an FM wave is $x(t) = 10 \sin [5.7 \times 10^8 \text{ t} + 5 \sin 12 \times 10^3 \text{ t}]$ Calculate : [6]
 - i) Carrier frequency
 - ii) Modulating frequency
 - iii) Modulation index
 - iv) Frequency deviation
 - v) Power dissipated in 100Ω
- c) With neat block diagram explain FM generation by Armstrong's Indirect method.

OR

- Q2) a) Compare Frequency modulation & Phase modulation System. [6]
 - b) Describe direct method of generation of FM wave with diagram. [6]
 - c) Explain balanced slope detector with diagram & characteristics. [6]
 - (3) a) Describe generation of flat top samples with circuit diagram & [6] waveform.
 - b) What is aperture effect? How to reduce aperture effect. [5]
 - c) Compare Pulse Amplitude modulation with Pulse position modulation.

OR

[6]

P.T.O.

Discuss generation of Pulse Amplitude modulation with block diagram & **Q4**) a) waveform. [6] b) Explain demodulation of PWM signal with block diagram. [6] State transmission B.W. of PAM signal & also state advantages, c) disadvantages & applications of PAM signal. [5] Discuss with block schematic, transmitter & receiver for DPCM *Q*5) a) (Differential pulse code modulation). [6] Draw block diagram of Delta modulation system & comment on draw b) back of Delta modulation. [6] Define term quantization error. State types of quantization & explain c) uniform quantization with its characteristics. [6] OR Explain generation & reconstruction of PCM signal [6] **Q6**) a) Describe Adaptive delta modulation technique & state its advantages. [6] b) Compare PCM with DM. c) [6] For the given sequence 1100Th01, sketch the waveform using the **Q7**) a) following data formats. [5] Unipolar RZ i) ii) Polar NRZ iii) Alternate Mark Inversion Split Phase Manchester iv) **Bipolar NRZ** v) Describe AT & Thierarchy with diagram. b) State types of Synchronization & explain any one in detail. [6] c) OR Explain spectral features of Line codes. **08**) a) [6] Discuss quasi synchronous multiplexing & state its advantages. [5] What is necessity of equalization in Digital transmission? Explain Adaptive equalization. [6]

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