Total No. of Questions : 8]

SEAT No. : ____

P9098

[Total No. of Pages : 2

[6179]-223

S.E. (Electronics/E&TC/E&CE)

PRINCIPLES OF COMMUNICATION SYSTEMS

(2019 Pattern) (Semester - IV) (204193)

Time : 2 ½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

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 $x(t) = 10 \sin [5.7\times10^8 t + 5 \sin 12\times10^3 t]$ Calculate : **[6]**

i) Carrier frequency
ii) Modulating frequency
iii) Modulation index
iv) Frequency deviation
v) Power dissipated in 100 Ω

c) With neat block diagram explain FM generation by Armstrong's Indirect method. **[6]**

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]**

Q3) a) Describe generation of flat top samples with circuit diagram & waveform. **[6]**

b) What is aperture effect? How to reduce aperture effect. **[5]**

c) Compare Pulse Amplitude modulation with Pulse position modulation. **[6]**

OR

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Q4) a) Discuss generation of Pulse Amplitude modulation with block diagram & waveform. **[6]**

b) Explain demodulation of PWM signal with block diagram. **[6]**

c) State transmission B.W. of PAM signal & also state advantages, disadvantages & applications of PAM signal. **[5]**

Q5) a) Discuss with block schematic, transmitter & receiver for DPCM (Differential pulse code modulation). **[6]**

b) Draw block diagram of Delta modulation system & comment on draw back of Delta modulation. **[6]**

c) Define term quantization error. State types of quantization & explain uniform quantization with its characteristics. **[6]**

OR

Q6) a) Explain generation & reconstruction of PCM signal. **[6]**

b) Describe Adaptive delta modulation technique & state its advantages. **[6]**

c) Compare PCM with DM. **[6]**

Q7) a) For the given sequence 110011101, sketch the waveform using the following data formats. **[5]**

i) Unipolar RZ

ii) Polar NRZ

iii) Alternate Mark Inversion

iv) Split Phase Manchester

v) Bipolar NRZ

b) Describe AT & T hierarchy with diagram. **[6]**

c) State types of Synchronization & explain any one in detail. **[6]**

OR

Q8) a) Explain spectral features of Line codes. **[6]**

b) Discuss quasi synchronous multiplexing & state its advantages. **[5]**

c) What is necessity of equalization in Digital transmission? Explain Adaptive equalization. **[6]**

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