

(3 Hours)

[Total Marks : 100

- N.B. : (i) Question no. 1 is compulsory.
(ii) Attempt any Four (04) out of the remaining Six(06) Questions.
(iii) Figures to the Right Indicate Full Marks.
(iv) Assume Suitable Data if necessary.

Q1: Attempt any Four:

- A. Explain an Electronic Communication System with the help of a Block Diagram. (05)
B. Compare Analog and Digital Communication. (05)
C. Compare TDM and FDM. (05)
D. Explain Pre-emphasis in FM. (05)
E. What is Quantisation in PCM? Define Quantisation Error. (05)

- Q2: A. (i) Define Noise Factor and Noise Figure. (05)
(ii) If each stage of an amplifier has gain of 10 dB and Noise Figure of 10 dB, determine the overall Noise Figure of a two stage cascaded amplifier. (05)
B. Using a Block diagram, Explain a Low Level AM Transmitter (10)

- Q3: A. Prove the following properties of Fourier Transform:
(i) Time Shifting (05)
(ii) Convolution in Time domain. (05)
B. Determine Fourier Transform for a Rectangular Pulse of amplitude 'A' and Time Period 'T' (Range of t is from $-T/2$ to $+T/2$) (10)

- Q4: A. What are the disadvantages of a Tuned RF Receiver. Draw the circuit of a Superheterodyne Receiver and Explain the same. (10)

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B. A Sinusoidal Carrier $V_c = 100\cos(2\pi 10^5 t)$ is amplitude modulated by a sinusoidal voltage $V_m = 50\cos(2\pi 10^3 t)$. Modulation depth is 50%. Calculate the amplitude and frequency of each side band and the rms voltage of the modulated carrier. (10)

Q5: A. What is multiplexing in communication system? Draw the block diagram of TDM-PCM system and Explain the same. (10)

B. State and Prove Sampling Theorem (10)

Q6: A. Explain FM detection using PLL (10)

B. What is the disadvantage of Delta Modulation. Explain with a neat diagram, how is it removed in Adaptive Delta Modulation. (10)

Q7: Write Short Notes on: (Attempt any Four)

A. Satellite Communication System. (05)

B. Satellite Communication System. (05)

C. Friis Formula. (05)

D. AGC Principle in Receivers. (05)

E. Amplitude Shift Keying. (05)

F. Frequency Shift Keying. (05)