Q.P.Code: 39121

1/1

(3 Hours) [Total Marks: 80]

Instructions:

1. Question No: 1 is compulsory.
2. Answer any three from the remaining questions.

1   (5 x 4)

a) State and prove Sampling theorem.
b) Write down the basic principle used in Super heterodyne receivers.
c) Explain the need of modulation in a communication system.
d) Brief the properties of entropy

2 a) Explain FET Reactance modulator for FM generation.   (10)
   b) A modulating signal $m(t)=10 \cos (2\pi \times 10^3 t)$ is amplitude modulated with a   (10)
carrier signal $c(t)=50 \cos (2\pi \times 10^5 t)$. Find the modulation index, the carrier
power, and the power required for transmitting AM wave.

3 a) Generate Huffman's code for the five symbols of a source having
probabilities 0.5, 0.25, 0.125, 0.0625, and 0.0625. Find the entropy of the   (10)
source, average code word length and efficiency of the code.
   b) Explain the generation of a Delta modulated signal. State the drawbacks of   (10)
DM and suggest methods to overcome it.

4 a) A message 101101 is to be transmitted in cyclic code with a generator   (10)
polynomial $G (D) = D^4 + D^3 + 1$. Obtain the transmitted code word. How
many check bits does the encoded message contain? Draw the encoding
arrangement for the same.
   b) Draw the block diagram of a PCM communication system. Explain the   (10)
function of each block with a neat sketch of input and output at each stage.

5 a) Explain the working principle of an BPSK modulator.   (10)
   b) With a neat block diagram, explain the operation of Armstrong Frequency   (10)
modulation system.

6 a)   (20)
Write short notes:
1) Optical Fiber Communication
2) Quantization process.
3) Advantages of Digital Communication Systems