T.E. Electrical V CBSGS QP CODE : 584301

5.6.17

(3 Hours) [Total Marks: 80]

N.B: (1) Question **No.1 is compulsory.**
(2) Answer any **three** from remaining **five** questions.
(3) Figures to the **right** indicate full marks.
(4) Assume the **data if it is necessary.**

1 Attempt any four of the following. (5*4)

(a) What is Entropy of an information source. When is Entropy maximum.
(b) Define Code rate, Hamming weight, Hamming distance. Also explain the role of 'd_{min}' in determining the Error in a code word.
(c)Differentiate between Analog communication and Digital communication.
(d)Explain how Power and Bandwidth saving is achieved using SSB system.
(e) Draw PCM Transmitter and Receiver.
(f) Explain the role of AGC and Ganged tuning in AM reception.

2 (a) Explain Medium power AM modulator circuit with its waveform. 20

(b) Explain FET Reactance modulator for FM generation

3 20

(a) Explain Delta modulation transmitter and receiver with the help of neat block diagram. Also explain Slope overload distortion and Granular noise.
(b)The voice signal in a PCM system is quantised in 16 levels with the following probabilities.
$P_1=P_2=P_3=P_4=0.1$, $P_5=P_6=P_7=P_8=0.05$,
$P_9=P_{10}=P_{11}=P_{12}=0.075$, $P_{13}=P_{14}=P_{15}=P_{16}=0.025$.Calculate the Entropy and information rate.Assume f_m=3khz

4 (a) Draw and Explain the Balance slope detection circuit. Also explain the Distortions in it. 20

(b) Explain regarding DPSK (i) Transmission (ii) Reception (iii) waveform for data bit sequence b(t) = 1011001. Also plot frequency spectrum .

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5 An error control code has the following parity check matrix 20

$$H=\begin{bmatrix}101100\\110010\\011001\end{bmatrix}$$

1)Determine the generator matrix(G)

2)Find the code word that begin with 101

3)Decode the received code word 110110.Comment on the error detection capability of the code.

(b) Draw the TRF receiver and give disadvantages of TRF receiver. Also explain Superhetrodyne receiver

6 Write short notes on (any two) 20

Optical Fiber Communication

Pre-Emphasis and De-Emphasis.

Advantages of Digital Communication Systems
