BE/COM/Sem IV

ws Oct- 10 167

Con. 5726–10.

Analog & Digital Communication

14/12/10

GT–6468

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** question from the remaining **six** questions.
(3) Assume any **suitable** data wherever **required** but justify the **same**.
(4) Answer to questions should be grouped and written **together**.

1. (a) In an AM wave calculate power saving when the carrier and one sideband are suppressed corresponding to – (i) m = 1 (ii) m = 0·5. **10**
   (b) Define code word, code rate and hamming weight. Also write note on Hamming code. **10**

2. (a) Write short notes on :–
      (i) Convolution codes **5**
      (ii) Cyclic code. **5**
   (b) For a (7, 4) linear block code the generator matrix is given by, **10**

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 0 \end{bmatrix}$$

      (i) Find the code vector
      (ii) Find the parity check matrix

3. (a) State and prove the sampling theorem for band pass filters. **10**
   (b) Explain PWM and PPM. **10**

4. (a) Define and explain various multiplexing techniques used in communication systems. **10**
   (b) What is line coding ? Draw the waveforms if the sequence is transmitted using :– **10**
      (i) Unipolar RZ
      (ii) Polar RZ
      (iii) AMI.
      (iv) Split Phase Manchester
      (v) M ary where M = 4

      Assume the binary sequence 1 1 0 1 0 0 1 1.

5. (a) Explain match filter and optimum receiver. **10**
   (b) Explain delta modulation and adaptive delta modulation and compare them. **10**

6. (a) Explain the concept of image frequency and double spotting. **10**
   (b) Explain block diagram of M-ary PSK and find the Eculidean distance for 8-ary PSK. **10**

7. Write short notes on any **three** of the following :– **20**
   (a) Intersymbol Interference
   (b) Various noise parameters
   (c) Ring Modulator
   (d) Companding
   (e) Pre-emphasis and De-emphasis.