

B.E. Eighth Semester (Electronics Engineering) (CGS)
10705 : Digital Communication : 8 XN 04

P. Pages : 2

Time :



AU - 3005

Max. Marks : 80

- Notes :
1. All question carry equal marks.
 2. Answer **three** question from Section A and **three** question from Section B.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Illustrate your answer necessary with the help of neat sketches.
 6. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Explain HDB-3 coding scheme. 7
b) What is the desirable properties of line code? Explain bipolar coding scheme. 6

OR

2. a) Draw RZ and NRZ unipolar, polar and bipolar format for the binary sequence 01101011 & comment on each line code. 7
b) Explain the desirable properties of line coding. 6
3. a) State & explain Shannon's encoding algorithm. 8
b) Derive an expression for entropy of mark off source. 6

OR

4. a) A numerical keypad has digit 0 to 7. Assume that the probability of sending anyone digit is same as that of sending any other digit. Calculate how often the buttons must be pressed in order to send out information at the rate of 36 bits/sec. 7
b) Show that :
 $H(x, y) = H(x/y) + H(y)$. 7
5. a) Derive an expression for the transfer function of a optimum filter at receiver. Assume suitable parameter. 7
b) Explain MSK transmitter & receiver. 6

OR

6. a) Derive an expression for probability of error of BFSK system. 7
b) Compare optimum filter & matched filter. 6

SECTION – B

7. a) Explain early-late gate symbol synchronization technique. 7
b) Explain how eye diagram can be used to monitor the performance of a baseband transmission system. 6

OR

8. a) What is equalization? Draw & explain adaptive equalizer. 7
b) With any one method for symbol synchronization explain importance of synchronization in digital communication system. 6
9. a) Design an encoder for the (7, 4) binary cyclic code generated by $g(x) = 1 + x^2 + x^3$ & verify its operation using message vector (1011). 8
b) Explain. 6
i) Types of error. ii) Type of code.

OR

10. a) The generator polynomial of a (8, 4) cyclic code is $g(x) = x^4 + x^2 + 1$. Find 16 codeword of this block in systematic form. 8
b) Define the following: 6
i) Channel data rate ii) Hamming distance
iii) Code efficiency.
11. a) Explain slow frequency hopping in frequency hopped spread spectrum. Also compare with fast frequency hopping. 7
b) Explain direct spread spectrum sequence. 6

OR

12. a) Explain CDMA system & list its advantages & disadvantages. 7
b) Define. 6
i) Jamming margin. ii) Processing Gain.
