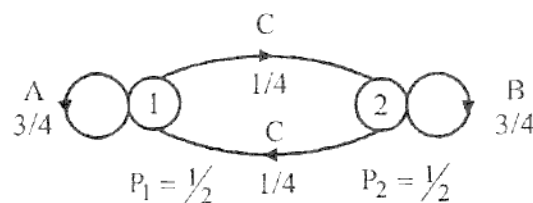




- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answer necessary with the help of neat sketches.
 5. Use of pen Blue/Black ink/refill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

SECTION – A

1. a) What is the importance of channel encoder and channel decoder blocks in digital communication system? What are the related parameters with these blocks? 7
 b) What is synchronization? With the help of diagram explain one of the clock synchronization method. 6
- OR**
2. a) Explain the function of following in a digital communication system. 8
 i) Source encoder & source decoder.
 ii) Modulator & Demodulator.
 b) What are the advantages and disadvantages of digital communication system over analog communication system. 5
3. a) State and explain Shannon's encoding algorithm. 6
 b) The state diagram of a stationary mark off source is given below. Find the entropy of the source. Also find G_1 and G_2 . 8

**OR**

4. a) Show that $H(x, y) = H(x) + H(y/x)$. 7
 b) Explain mark off statistical model for information sources. 7
5. a) What is FSK signal scheme. Calculate the probability of error (P_e) for coherent FSK signal scheme. 7
 b) Explain BPSK receiver in detail. 6
- OR**
6. a) Compare coherent ASK, FSK and PSK in terms of band width, power requirement, immunity to channel impairments and equipment complexity. 7
 b) Find the expression for probability of error for a coherent binary ASK. 6

SECTION – B

7. a) What are the types of code? Describe linear block code. 6

- b) Consider a (7,4) linear code whose generation matrix is

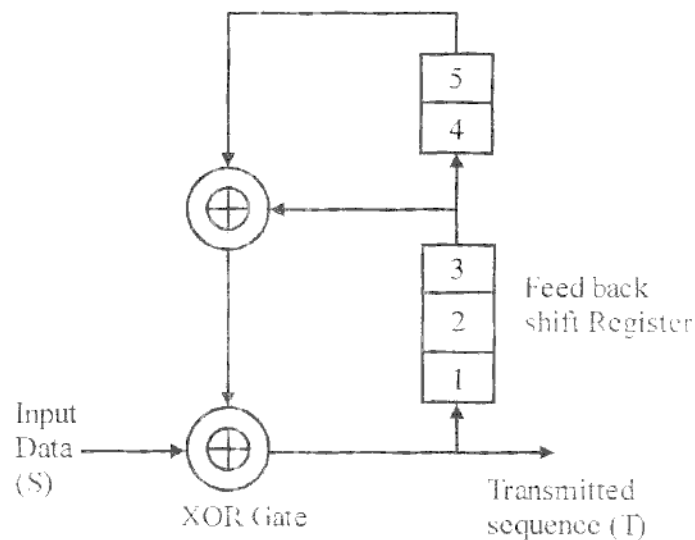
8

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

- i) Find the parity check matrix of this code.
ii) Find the minimum weight of this code.

OR

8. a) What are the method of controlling error and what are there merits and demerits? 6
b) Design a linear block code with a minimum distance of three and message block size of eight bits. 8
9. a) Discuss the Nyquist's criterion of pulse shaping for zero ISI in baseband PAM system. 5
b) Find the output sequence "T" if an input sequence. 8
S = 101010100000111 is applied to scrambler as shown in the figure below.



Hence, draw a matching Unscrambler and show that it can reconstructed the original sequence 'S'

OR

10. a) Explain Eye diagram. How it can be observed on CRO? 6
b) What do you understand by Duo binary signaling? Compare it with binary transmission system. 7
11. a) Explain FDMA and CDMA and compare them. 6
b) Explain the difference between slow frequency hopping and fast frequency hopping. 7

OR

12. a) Explain the following parameters. 6
i) Jamming margin. ii) Processing Gain.
b) What is PN sequence? Explain the properties of PN sequence. 7
