



## Information Theory & Coding Techniques (1100)

**P. Pages : 2**

**Time : Three Hours**

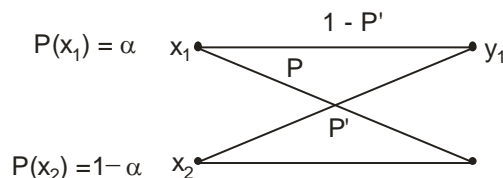
**Max. Marks : 100**

### Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any two** sub questions from each unit.
5. Assume suitable data.
6. All units carry equal marks.

## UNIT – I

1. a) Explain : **10**
  - i) Information content of a symbol.
  - ii) Entropy.
  - iii) Information rate.
  - iv) DMLS.
  - v) Mutual Information.
- b) Find the channel capacity of binary channel as shown in figure. **10**



- c) Explain in detail shanon Fano code. **10**

## UNIT - II

2. a) Explain FEQ in detail. **10**
- b) Explain linear block code and Hamming code. **10**

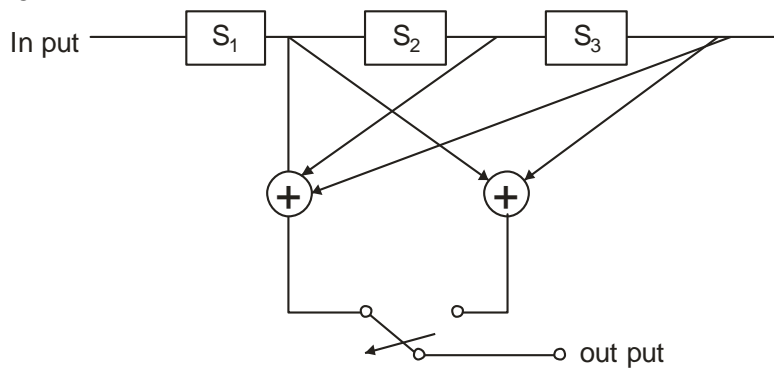
- c) The parity check matrix of (7,4) code is 10

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

Calculate the syndrome vector for single bit error.

### UNIT - III

3. a) Draw and explain practical convolutional encoder. 10
- b) Draw and explain : 10
- i) Code tree      ii) Code trellis      iii) State diagram.
- c) Determine the state diagram for convolutional encoder shown in figure. 10



### UNIT - IV

4. a) Explain BCH and RS code. 10
- b) Explain cryptography in detail. 10
- c) Explain RSA algorithm with example. 10

### UNIT - V

5. a) Explain TDMA and FDMA. 10
- b) Explain block diagram of satellite transponder. 10
- c) Explain wireless standards IS95. 10

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