333612(33)

B. E. (Sixth Semester) Examination, 2020

(Old Scheme)

(IT Branch)

INFORMATION THEORY & CODING

Time Allowed : Three hours
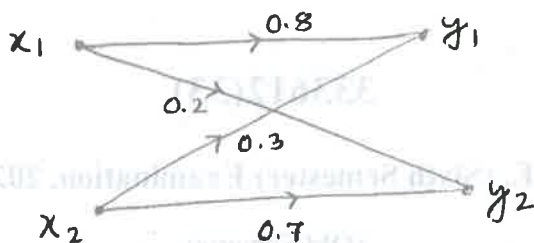
Maximum Marks : 80

Minimum Pass Marks : 28

*Note : (i) Part (a) of each question is compulsory. Attempt any **two** parts from (b), (c) and (d).*

(ii) The figures in right-hand margin indicate marks.

Unit-I

1. (a) Define entropy.   2

   (b) Explain Shannon Hartley theorem.   7

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(c) Explain line coding with it's type. 7

(d) For the given channel. 7

(i) Find the channel matrix.

(ii) If $P(x_1) = P(x_2) = 0.5$, find $P(y_2)$ and $P(y_1)$.

(iii) Find $P(x_1, y_2)$ and $P(x_2, y_1)$.

Unit-II

2 (a) Define channel coding theorem. 2

(b) What is DMS? Write a short notes on types of channel. 7

(c) How to generate hamming code for a given message? Explain with suitable example. 7

(d) What is parity check polynomial? How does it help

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in process of error detection and correction along with suitable example. 7

Unit-III

3. (a) Define negative compression. 2

(b) Write short note on CCITT group 3 1 D and 2 D compression. 7

(c) Differentiate between lossless and lossy compression with advantage and disadvantage. 7

(d) What is the difference between static and dynamic Huffman coding? 7

Unit-IV

4. (a) What is Inter-frame coding? 2

(b) Explain MPEG 2 compression methodology along with example. 7

(c) Explain CCITT H·261 video algorithm. 7

(d) Describe moving picture types and macro blocks. 7

Unit-V

5. (a) What is Cryptography? 2

   (b) Explain RSA algorithm with suitable example. 7

   (c) Why secrecy is required? Explain Diffie-Hellman public key distribution method. 7

   (d) Explain digital signature procedure for implementation and how does digital signature provide data security? 7