JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, July - 2021
INFORMATION THEORY AND CODING
(Computer Science and Engineering)

Time: 3 hours   **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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1.a)   Explain with a block diagram how Data Transmission is done in Storage Systems.
  b)   Write a brief note on types of Errors.   [7+8]

2.   Explain in detail about Huffman coding.   [15]

3.   Prove the theorem "No two *n-tuples* in the same row of a standard array are identical. Every *n-tuple* appears in one and only one row", by considering the following matrix **G** as an example,   [15]

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

4.   Explain with a neat diagram the working of a Generic Decoder for an (n,k) Cyclic Code.   [15]

5.   Devise an Encoder and Decoder for the (15,11) Cyclic Hamming code generated by $g(X) = 1 + X + X^4$.   [15]

6.   Explain with a neat diagram the working of the Error-Trapping Decoder.   [15]

7.   Discuss in detail about Structural Properties of Convolutional Codes.   [15]

8.   Write a detailed note on the Decoding of the BCH Codes.   [15]

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