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| **SL.No.** | **Unit 3 & 4,5 Questions** | **CO** | **PO** | **BL** |
| 1 | Define Hamming Weight,Hamming Distance and Minimum distance. | 4 | 1 | 1 |
| 2 | Design a (n,k) single error correcting code with a minimum distance   dmin=3 and a message length of 4 bits. | 4 | 3 | 3 |
| 3 | Implement an encoder for the (7,3) binary cyclic code generated by   g(x)=1+x+x2+x4 for the message vectors [101] and [011] | 4 | 3 | 3 |
| 4 | A (7,4) Cyclic codes has the generator polynomial g(x)=1+x+x3.Find the code vectors both in Systematic and Non Systematic form for the message  bits (1 1 0 1) and (1 1 0 0). | 4 | 3 | 3 |
| 5 | In a (15,5) Cyclic code,the generator polynomial is given by  g(x)=1+x+x2+x4+x5+x8+x10.Draw the block diagram of an encoder and syndrome calculator circuit. | 4 | 3 | 3 |
| 6 | Consider the (3,1,2) convolution code with g(1)=(1 1 0), g(2) =(1 0 1),g(3) = (1 1 1).  i) Find the constrain Length.  ii) Draw the encoder block diagram  iii) Find the Generator Matrix  iv) Find the rate of the encoder  v) Find the codeword for the message sequence (1 1 1 01) using time   domain and transfer domain. | 5 | 3 | 3 |
| 7 | Consider the binary convolutional encoder shown in the fig. Find the code vector for the message sequence 10111 | 5 | 3 | 3 |
| 8 | Implement the Standard array for the (6,3) for the code vectors (000000),(001110),(010011),(011101),(100101), (101011), (110110) and (111000).  Find the correct code word for the received vector R=[0 0 0 0 1 1] Design Decoding circuit | 4 | 3 | 3 |
| 9 | A (7,4) linear cyclic code has a generator polynomial g(x) = 1+x +x3 Draw block diagram of an encoder , List the shift register contents in a tabular form for the message 1110 and obtain the code word corresponding to the message given, Draw the syndrome calculator for this code and if the received vector is 1110101. Detect and correct the single error in it by listing the contents of the syndrome calculator in tabular form. | 4 | 3 | 3 |
| 10 | With example , explain  i)BCH CODE  ii)RS CODE  iii)CRC  iv)GOLAY CODE  v)MAXIMUM LENGTH  vi)MAJORITY LOGICAL DECODABLE  vii)SHORTENED CYCLIC CODE | 4 | 2 | 3 |