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Question Paper Code: 54405

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Electronics and Communication Engineering

15UEC405 - DIGITAL COMMUNICATION

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. A Binary Huffman coding is a CO1- R
 - (a) Prefix condition code
 - (b) Prefix & Suffix condition code
 - (c) Suffix condition code
 - (d) None of the mentioned

2. Block length in a code word is a CO2- R
 - (a) Number of Non Zero elements
 - (b) Distance between elements
 - (c) Number of parity bits
 - (d) Number of elements

3. Which type is used and preferred in digital logic circuits CO3- R
 - (a) NRZ-M
 - (b) NRZ-L
 - (c) Bipolar RZ
 - (d) RZ-AMI

4. BPSK system modulates at the rate of CO4- R
 - (a) 4 bit/ symbol
 - (b) 3 bits/symbol
 - (c) 2 bits/symbol
 - (d) 1 bits/symbol

5. Spread spectrum has immunity from CO5- R
 - (a) Multi-path distortion
 - (b) Noise & Multi-path distortion
 - (c) Noise
 - (d) Natural phenomena

PART – B (5 x 3= 15 Marks)

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| 6. State Channel Coding Theorem and its need. | CO1- R |
| 7. Define constraint length in convolutional code? | CO2- R |
| 8. Outline the causes for ISI? | CO3- R |
| 9. Define non-coherent detection. | CO4- R |
| 10. Define Process gain and Jamming margin. | CO5- R |

PART – C (5 x 16= 80 Marks)

11. (a) $P = \{ 0.13, 0.1, 0.03, 0.15, 0.18, 0.41 \}$ From the above probability Find out the H, Average length , and efficiency Use Huffman Coding . CO1- App (16)

Or

- (b) $P = \{ 0.13, 0.1, 0.03, 0.15, 0.18, 0.41 \}$ From the above probability Find out the H, Average length , and efficiency Use Shannon Coding. CO1- App (16)

12. (a) For a systematic linear block code, the three parity check digits P_1, P_2, P_3 are given by $P_{k,n-k} = 101$ CO2- App (16)

111

110

011

- (i) Construct generated matrix.
(ii) Assess the t code generated by the matrix.
(iii) Determine error correcting capacity.
(iv) Decode the received words with an example.

Or

- (b) Explain the concept and design procedure of Viterbi decoding algorithm for a block code. CO2- App (16)

13. (a) Point out the types of Adaptive Equalizers in detail with neat diagrams. CO3- U (16)

Or

- (b) Explain the Correlative level coding & Eye pattern. CO3- U (16)

14. (a) Explain in details about ASK and PSK CO4- U (16)
- Or
- (b) Compare QAM & QPSK CO4- Ana (16)
15. (a) With an appropriate example explain the concept and working of frequency hopping spread spectrum communication systems. Give necessary equations. CO5- U (16)
- Or
- (b) Draw the block diagram of a direct sequence spread spectrum transmitter and receiver and explain its function in detail. CO5- U (16)

