Reg.No.

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**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14EC2021** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DIGITAL COMMUNICATION** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q.**  **No.** | **Sub**  **Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | With a neat block diagram explain Delta modulation and discuss the types of quantization errors occurring in it. Also brief the methods to overcome the shortcomings. | CO1 | 20 |
| **(OR)** | | | | |
| 2. |  | Sketch the block diagram of Pulse Code Modulation system and explain the function of each building blocks in detail. | CO1 | 20 |
|  |  |  |  |  |
| 3. |  | Describe the basic operation of matched filter receiver with suitable diagrams. | CO1 | 20 |
| **(OR)** | | | | |
| 4. |  | Discuss the causes of ISI and the methods to mitigate ISI | CO1 | 20 |
|  |  |  |  |  |
| 5. |  | Explain the principle and operation of QPSK transmitter and receiver with the help of block diagram and signal space diagram. | CO2 | 20 |
| **(OR)** | | | | |
| 6. |  | Sketch the block diagram of M ary PSK system and explain its principle and operation with signal constellation diagram. | CO2 | 20 |
|  |  |  |  |  |
| 7. |  | A discrete memory less source has an alphabet of five symbols with their probabilities for its output as given here:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Symbol | S0 | S1 | S2 | S3 | S4 | | Probability | 0.4 | 0.2 | 0.2 | 0.1 | 0.1 |   Compute two different Huffman codes for this source. Hence, for each of the two codes, find (a) The average code-word length (b) The variance of the average code-word length over the ensemble of source symbols. | CO3 | 20 |
| **(OR)** | | | | |
| 8. |  | Design a convolutional encoder of code rate r = 1/2 and constraint length of K = 3 for the given generator polynomial (i) input- top adder output path is 111 (ii) input-top adder output path is 101. Encode the message sequence 10011 using time domain and transform domain approach. | CO3 | 20 |
|  |  | **Compulsory**: |  |  |
| 9. | a. | Demonstrate direct sequence spread coherent binary phase shift keying with suitable diagrams and illustrations. | CO3 | 15 |
|  | b. | Explain the generation of pseudo noise sequences. | CO3 | 5 |