Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **17EC3004** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MODERN DIGITAL COMMUNICATION TECHNIQUES** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Enlist possible parameters used to select PCM formats. | CO1 | 6 |
| b. | Verify the process of precoded duobinary PCM signaling using the data 101110101where the reference bit is 0. | CO1 | 14 |
| (OR) | | | | |
| 2. | a. | Explain the classification of quantization process with a simple example. | CO1 | 12 |
| b. | Brief about quantization process and derive the expression for (SNR)q. | CO1 | 8 |
|  |  |  |  |  |
| 3. | a. | For the bit stream 1011010101, draw the following PCM waveforms.  i. NRZ-L ii. NRZ-S iii. Bi-phase-M iv. Bi-phase-L |  | 10 |
|  | b. | What is companding of signals? Explain its types. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Explain the matched filter and derive its maximum SNR. | CO2 | 15 |
|  | b. | Draw and describe the structure of baseband receiver unit. | CO2 | 5 |
|  |  |  |  |  |
| 5. | a. | Explain the pulse shaping process of Raised Cosine filters to reduce ISI. | CO2 | 10 |
|  | b. | Elaborate the theory of M-ary signaling schemes and compare their error performance. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | List out the properties of estimator. | CO2 | 5 |
|  | b. | Explain the matched filter and correlator configurations and obtain the expressions for decision error and minimum error probabilities. | CO2 | 15 |
|  |  |  |  |  |
| 7. | a. | Draw the transmitter and receiver schematic of CBPSK system and obtain the probability of error. | CO2 | 8 |
|  | b. | Illustrate the QPSK modulation and detection process using a sketch. | CO2 | 12 |
| (OR) | | | | |
| 8. | a. | Neatly explain the MSK modulation and detection process. | CO3 | 10 |
|  | b. | With block diagram brief the non-coherent FSK detection using envelope detectors. | CO3 | 10 |
|  | |  |  |  |
|  | | **Compulsory:** |  |  |
| 9. | a. | With a neat sketch explain the OFDM technique. | CO3 | 15 |
|  | b. | What are the limitations of MCM scheme? | CO3 | 5 |

ALL THE BEST