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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EC3012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MODERN DIGITAL COMMUNICATIONS** | **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. | List out the parameters used to choose PCM formats. | CO1 | (6) |
| b. | Explain correlatively coded duobinary signaling of PCM data for the bit stream 101110101 by taking reference bit-0. | CO1 | (14) |
| (OR) | | | | |
| 2. | a. | Explain the types of quantization process with suitable example. | CO1 | (12) |
| b. | With a neat sketch explain the 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. Biphase-M iv. Unipolar-RZ |  | (10) |
|  | b. | Explain the companding process with its type and significance | CO1 | (10) |
| (OR) | | | | |
| 4. | a. | Using a neat sketch explain the baseband data formatting process. | CO2 | (8) |
|  | b. | Comment on the spectral features of various PCM schemes. | CO2 | (7) |
|  | c. | Why Eb/No is a natural figure of merit of digital communication systems. | CO2 | (5) |
| 5. | a. | Explain the matched filter and derive its maximum SNR. | CO2 | (15) |
|  | b. | Describe the structure of baseband detection system. | CO2 | (5) |
| (OR) | | | | |
| 6. | a. | How will you compare convolution with correlation? Obtain the correlation realization of matched filter. | CO2 | (5) |
|  | b. | Explain how pulse shaping of Raised Cosine filters reduce ISI. | CO2 | (15) |
| 7. | a. | With neat block diagram, explain decision feedback equalizer. | CO2 | (10) |
|  | b. | Brief the theory of channel characterization with its transfer function. | CO2 | (10) |
| (OR) | | | | |
| 8. | a. | Neatly explain the MPSK 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 multi-carrier modulation technique. | CO3 | (15) |
|  | b. | List out the properties of an estimator. | CO3 | (5) |

ALL THE BEST