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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

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

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

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **10EC204** | **Duration :** | **3 hrs** |
| **Sub. Name:** | **DIGITAL COMMUNICATION** | **Max. Marks:** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | What is quantization? | 1 |
| 2. | Define Nyquist Rate | 1 |
| 3. | What is baud Rate | 1 |
| 4. | Generate PSK waveform for 1 0 0 1 1 1 0 0 | 1 |
| 5. | What is the spectral density of white Gaussian noise | 1 |
| 6. | Define correlator | 1 |
| 7. | Mention the difference between Hamming and block codes | 1 |
| 8. | What is entropy | 1 |
| 9. | Mention the applications of spread spectrum | 1 |
| 10. | What are the types of frequency hopping techniques? | 1 |

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| **PART-B(5X3=15 MARKS)** | | | | |
| 11 | What are the methods to mitigate ISI | | | 3 |
| 12 | Mention the possible errors in DM | | | 3 |
| 13 | What do you mean by coherent and non coherent receiver | | | 3 |
| 14 | Differentiate Systematic and Nonsystematic code word? | | | 3 |
| 15 | State any two properties of PN sequence? | | | 3 |
| **PART C(5 X 15= 75 MARKS)** | | | | | |
| 16. | |  | With neat block diagram explain pulse code modulation | 15 | |
| (OR) | | | | | |
| 17. | |  | For the input binary sequence 0010110.The extra bit needed for precoding is chosen as 1.explain the concept of duo binary encoding. | 15 | |
| 18. | |  | Explain the concept of binary FSK with neat diagrams? | 15 | |
| (OR) | | | | | |
| 19. | |  | For the input binary sequence x={1; 1; -1; -1; -1 ;1;1;1}sketch the transmitted waveform of MSK | 15 | |
| 20. | |  | Derive an expression for probability of error in matched filter | 15 | |
| (OR) | | | | | |
| 21. | |  | Elucidate the importance of baseband signal receiver? | 15 | |
| 22. | | a. | State and explain Shannon’s channel capacity theorem? | 8 | |
| b. | An error control code has the following parity check matrix as H=[1 0 1 1 0 0;1 1 0 0 1 0;0 1 1 0 0 1].Determine the generator matrix G and find the code word that begins with 101…. | 7 | |
| (OR) | | | | | |
| 23. | |  | Explain various decoding methods? And also decode x={11; 10; 11; 11; 01; 01; 11} using code tree and code trellis methods | 15 | |
| 24. | | a. | How will you generate PN sequence? | 5 | |
| b. | Explain frequency hop spread spectrum? | 10 | |
| (OR) | | | | | |
| 25. | |  | With neat diagrams explain direct sequence spread spectrum with example? | 15 | |

ALL THE BEST