****

**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**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **11EC205** | **Duration :** | **3 hrs** |
| **Sub. Name:** | **Digital Communication** | **Max. Marks:** | **100** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Q. No.** | **Questions** | | **Marks** |
| **PART-A(10X1=10 MARKS)** | | | |
| 1. | Define entropy. | | (1) |
| 2. | What is the channel capacity of lossless channel? | | (1) |
| 3. | What is the spectral density of white Gaussian noise? | | (1) |
| 4. | Mention the types of estimators used in communication receivers. | | (1) |
| 5. | What is the other name for delta modulator? | | (1) |
| 6. | What is the bandwidth of M ary FSK? | | (1) |
| 7. | How will you calculate generator matrix? | | (1) |
| 8. | Mention the number of errors that can be corrected in Hamming code. | | (1) |
| 9. | What are the applications of frequency hopping? | | (1) |
| 10. | What is spread spectrum? | | (1) |
| **PART B(5 X 3= 15 MARKS)** | | | |
| 11. | What are the advantages of Digital communication? | | (3) |
| 12. | Draw a correlation receiver. | | (3) |
| 13. | Differentiate uniform and non uniform quantization. | | (3) |
| 14. | Mention the convolutional decoding methods. | | (3) |
| 15. | Discuss the properties of PN sequence generator. | | (3) |
| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | A discrete memory less source has five symbols and their probabilities as (s0,0.4) (s1,0.2) (s3,0.2) (s4,0.1) (s5,0.1) compute Huffman coding for this source moving the “combined” symbol as low as possible | | 15 |
| (OR) | | | |
| 17. | A voice – grade channel of the telephone network has a bandwidth of 3.4 kHz, calculate the channel capacity if signal to noise ratio is 30dB and also explain channel capacity theorem | | 15 |
| 18. | Explain the methods to find basis function in Gram-Schmidt Orthogonalization procedure. | | 15 |
| (OR) | | | |
| 19. | Determine the probability of error in Matched filter. | | 15 |
| 20. | Find the encoded output in duo binary encoding for the input b={0 0 1 0 1 1 0}. | | 15 |
| (OR) | | | |
| 21. | Explain the methods to generate and detect binary PSK signal with neat diagrams. | | 15 |
| 22. | a. | Find out the generator matrix corresponding to G(P)=p3+p+1 and find out the code vectors for (7,4) cyclic code. | 8 |
| b. | Differentiate systematic and non systematic codeword with an example. | 7 |
| (OR) | | | |
| 23. | a. | Find the convolutionally encoded output for the input m=(1 0 0 1 1) and generating sequences g1=(1 1 1) g2=(1 0 1). | 8 |
| b. | Explain any one convolutional decoding method with example. | 7 |
| 24. | a. | Explain PN sequence generator with example. | 7 |
| b. | Write in detail about frequency hopping spread spectrum technique. | 8 |
| (OR) | | | |
| 25. | With neat diagram and illustration explain direct sequence spread spectrum technique. | | 15 |