**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
**(AUTONOMOUS)**
**M.Tech I Year I Semester Regular & Supplementary Examinations February 2018**
**DIGITAL COMMUNICATION TECHNIQUES**
**( DECS )**

Time: **3** hours                                            Max. Marks: **60**

(Answer all Five Units **5 X 12 =60** Marks)

## UNIT-I

| | | | |
|---|---|---|---|
| 1 | a | State and Prove Chebyshev Inequality. | 6M |
| | b | List out Gram-Schmidt Orthogonalization procedure. | 6M |

**OR**

| | | | |
|---|---|---|---|
| 2 | a | Define Auto-correlation Function and List out its various properties. | 6M |
| | b | Express the coherent binary FSK in terms of Ortho-normal functions. Draw its signal space diagram. | 6M |

## UNIT-II

| | | | |
|---|---|---|---|
| 3 | a | Explain Matched filter receiver with a neat diagram. | 6M |
| | b | Write about the Optimum receiver for M-ary orthogonal signals. | 6M |

**OR**

| | | | |
|---|---|---|---|
| 4 | a | Derive the expression for the probability of error when the signal is corrupted by AWGN. | 8M |
| | b | Explain Karhunen-Loeve expansion approach. | 4M |

## UNIT-III

| | | | |
|---|---|---|---|
| 5 | a | Derive the expression for probability of error when a BPSK signal is passed through a slow Rayleigh's fading channel. | 6M |
| | b | Discuss about performance of Rician fading channels. | 6M |

**OR**

| | | | |
|---|---|---|---|
| 6 | a | Discuss about Rayleigh fading channel. | 6M |
| | b | Mention the similarities and differences between Rayleigh's and Rician fading channels. | 6M |

## UNIT-IV

| | | | |
|---|---|---|---|
| 7 | a | Derive the expression for probability of error in case of QPSK digital modulation scheme. | 8M |
| | b | Explain about optimum coherent receiver for fading channels. | 4M |

**OR**

| | | | |
|---|---|---|---|
| 8 | a | Explain the performance of FSK modulation scheme. | 6M |
| | b | Compare FSK , DPSK and MSK modulation schemes. | 6M |

## UNIT-V

| | | | |
|---|---|---|---|
| 9 | a | Discuss about the importance of carrier synchronization | 6M |
| | b | With the help of a diagram, explain Decision feedback equalizer. | 6M |

**OR**

| | | | |
|---|---|---|---|
| 10 | a | Discuss about OFD multiplexing. | 6M |
| | b | Write the advantages and disadvantages of OFDM technique. | 6M |

**\*\*\* END \*\*\***