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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)****M.Tech I Year I Semester (R16) Regular Examinations January 2017****DIGITAL COMMUNICATION TECHNIQUES**

(DECS)

(For Students admitted in 2016 only)

Time: **3 hours**Max. Marks: **60**(Answer all Five Units **5 X 12 =60** Marks)**UNIT-I**

- Q.1** a. Define Moment Generating function (MGF). How do you calculate the moments from the MGF? 6M  
b. Write about first order and second order stationary processes. 6M

**OR**

- Q.2** a. Explain the analogy between the vectors and signals. 6M  
b. Express the coherent binary PSK in terms of Ortho-normal functions. Draw its signal space diagram. 6M

**UNIT-II**

- Q.3** a. With the help of neat block diagram, explain the correlation receiver. 6M  
b. State and prove the Karhunen-Loeve theorem. 6M

**OR**

- Q.4** a. Explain the binary baseband receiver. 4M  
b. Write about probability of error for envelope detection of M-ary orthogonal signals. 8M

**UNIT-III**

- Q.5** a. Explain about statistical models for fading channels. 6M  
b. Classify and characterize the fading multipath channels. 6M

**OR**

- Q.6** a. What are the causes of fading? And explain the effects of fading in detail. 4M  
b. Explain the representation of time varying channel impulse response. 8M

**UNIT-IV**

- Q.7** a. Explain about optimum coherent receiver for Rayleigh fading channels. 6M  
b. Derive the expression for probability of error in case of FSK digital modulation scheme. 6M

**OR**

- Q.8** a. Give the differences between Coherent and Non coherent receivers. 6M  
b. Compare MSK performance with that of QPSK. 6M

**UNIT-V**

- Q.9** a. Derive the condition of Nyquist pulse for zero ISI. 8M  
b. What is meant by Partial response signaling? 4M

**OR**

- Q.10** Draw the block diagram of OFDM system, & explain the importance of each block (both transmitter & receiver). 12M

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