

**B.TECH SEM - V (2007 COURSE) (E & TC ENGG.) : SUMMER .**

**2018**

**SUBJECT: DIGITAL COMMUNICATION**

Day: **Wednesday**  
Date: **23/05/2018**

**S-2018-2696**

Time: **10.00 AM TO 01.00 PM**  
Max Marks. 80

**N.B. :**

- 1) **Q. No 1 and Q. No. 5 are COMPULSORY.** Out of remaining questions answer **ANY TWO** questions from each section **I** and Section-**II**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Both the sections should be written in **SEPARATE** answer book.
- 4) Assume suitable data, if necessary.

**SECTION-I**

- Q.1** a) Define the following terms, (06)  
i) stationary process  
ii) ensemble average  
iii) ergodic process
- b) A Delta Modulator system operates at 3 times Nyquist rate for signal with 3.2KHz bandwidth. The quantization step is 200mv. Determine the maximum amplitude of 1 KHz input sinusoid for which DM does not show slope overload. (04)
- c) Write short note on digital multiplexing. (04)
- Q.2** a) What is Delta Modulation? Explain with diagram. (07)  
b) Explain How data is stored and read from compact disc(CD)? (06)
- Q.3** a) State sampling theorem. What is aliasing effect? (07)  
b) Explain reconstruction of signal using interpolation. (06)
- Q.4** a) Explain bit synchronizer with diagram. (07)  
b) Draw following line coding formats for data 101100101 (06)  
i) Polar RZ ii) Bipolar RZ iii) Polar NRZ

**SECTION - II**

- Q.5** a) Write short note on M-ary PSK. (06)  
b) Write short note on integrate and dump filter. (06)  
c) What is spread spectrum? (02)
- Q.6** a) Draw block diagram of QPSK and explain its working with waveforms for input 10011010. (08)  
b) Compare BASK, BPSK, BFSK. (05)
- Q.7** a) Derive expression for probability of error of binary FSK. (07)  
b) Write note on optimum filter. (06)
- Q.8** a) Explain frequency Hopping spread spectrum FHSS transmitter and receiver. (07)  
b) Explain performance parameters of DSSS. (06)

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