Roll No. ..... Total Pages : 03

July-22-00320

B. Tech. EXAMINATION, 2022

Semester V (CBCS)

DIGITAL COMMUNICATION

EC-501

Time : 3 Hours *Maximum Marks : 60*

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *Five* questions in all, selecting *one* question from each Sections A, B, C and D. Q. No. **9** is compulsory.

Section A

1. (i) Explain sampling theorem. Discuss Ideal/ Instantaneous Sampling Technique. **5**

(ii) Explain the complete block diagram of digital Communication System. **5**

2. Explain Pulse code modulation system and explain ISI, Eye pattern, equalization and companding in context of PCM system. **10**

Section B

3. Draw and explain the block diagram of baseband transmission of digital data system and also explain nyquist channel. **10**

4. Discuss Gram-Schmidt orthogonalization procedure in detail. Also explain maximum likelihood detector. **10**

Section C

5. (a) State various types of line codes with their power spectrum. **5**

   (b) Derive the expression of probability of bit error of DPSK modulation scheme. **5**

6. (a) Compare ASK, PSK and FSK modulation schemes. **5**

   (b) Explain minimum shift keying MSK system with proper diagram. Compare GMSK and MSK. **5**

Section D

7. Explain generation and detection of QPSK and draw constellation diagram of O-QPSK. **10**

8. Explain with proper diagram of different types of line codes techniques. **10**

(Compulsory Question)

9. Attempt any *four* questions. Each question carries equal marks : **5×4=20**

   (i) Write a short note on slope overload distortion and granular noise.

   (ii) What is delta modulation ? Compare between DM and DPCM.

   (iii) Discuss the advantage of digital communication over analog communication system.

   (iv) Explain aliasing effect. How can it be removed ?

   (v) Draw the constellation diagram of MSK and PSK.

   (vi) Write a short note on additive white Gaussian noise channel.

   (vii) What are coherent digital modulation techniques ?

   (viii) Explain matched filter receiver.