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May 2023

B.Tech. (ENC) IV SEMESTER

Digital Communication

(ECP-401)

Time: 3 Hours]

[Max. Marks. : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Compare digital and analog signals. Give an example also. (1.5)

(b) Define Fourier series and give its applications. (1.5)

(c) Enlists salient features of X.21. (1.5)

(d) What is meant by RS 232? Give its applications. (1.5)

(e) Make comparisons between connection oriented and connectionless-services. (1.5)

(f) Enlists salient features of packet switching. (1.5)

(g) What is meant by virtual circuits? (1.5)

(h) Define Hamming codes. Give its applications. (1.5)

(i) What is meant by data compression? (1.5)

(j) Briefly explain security in data communications. (1.5)

PART-B

2. (a) Enlist properties of Fourier Transform. Also explain any two. (10)

   (b) Define ESD and PSD. Also discuss effect of limited bandwidth on digital signal. (5)

3. (a) State and explain Nyquist theorem and Shannon limit. (5)

   (b) Differentiate between twisted pair, coaxial and fiber optic-cables. (10)

4. Define WDM. Enlists salient features of PSTN and explain the working of ISDN. (15)

5. (a) Differentiate between frequency division and time division multiplexing. (5)

   (b) Compare (i) asynchronous and synchronous transmission (ii) simplex, half duplex and full duplex communication modes. (10)

6. (a) Define CRC. Explain Parity check, block sum check and frame check sequences. (10)

   (b) Differentiate secret key cryptography and public key cryptography. (5)

7. Using an example, explain run length encoding and Huffman encoding. (15)