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August/September 2022

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) Give salient features of sine and square waves. (1.5)

(b) Define connectionless-services. Give its use in digital communication. (1.5)

(c) What do you understand by NRZ? Give its application. (1.5)

(d) State and explain Nyquist theorem. (1.5)

(e) What are transmission impairments? Give examples. (1.5)

(f) What is meant by PSTN? Enlists its salient features. (1.5)

(g) Define wave division multiplexing. Give its applications. (1.5)

(h) What is cyclic redundancy check? Give its merits. (1.5)

(i) What is data compression? Give its applications. (1.5)

(j) Enlists salient features of RS-232. (1.5)

PART-B

2. (a) Define ESD and PSD. Also explain effects of limited bandwidth on digital signal. (10)

(b) Differentiate between Fourier series and Fourier Transform. (5)

3. (a) Make comparisons between digital and analog signals. (5)

(b) Define modulation. Using an example, explain various properties of a signal. (10)

4. Compare twisted pair, co-axial and fiber optic-cables. Using suitable schematics, explain the operation of Manchester and differential Manchester encoding. (15)

5. (a) Make comparison between virtual circuits and permanent virtual circuits. (5)

(b) Define FDM and TDM. Explain the operation, merits and applications of ISDN. (10)

6. (a) What is meant by transmission errors? By using an example, explain the concept of parity check and block sum check in data communication. (10)

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

7. Compare Run length encoding and Huffman encoding. Also, by using an example, explain Huffman encoding. Give its merits and demerits. (15)
