

Roll No.

Total Pages : 03

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May 2024

B. Tech. (ENC) (Fourth Semester)

Digital Communication (ECP-401)

Time : 3 Hours]

[Maximum Marks : 75

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

Part A

1. (a) Define Digital signal. Give its any *two* applications. **1.5**
- (b) Enlist any *three* properties of Fourier Transform. Give their significance also. **1.5**
- (c) Enlists any *three* salient features of Interface RS 232. **1.5**
- (d) Define differential Manchester encoding. Also, give its merits. **1.5**
- (e) What is meant by connection-oriented services ? Give examples and applications. **1.5**

- (f) Define Frequency division multiplexing. Give its any *two* applications. 1.5
- (g) Make comparisons between Amplitude and Phase modulation. 1.5
- (h) What is meant by Run length encoding ? Give its merits and demerits. 1.5
- (i) State and explain Nyquist theorem. 1.5
- (j) Define CRC. Give its advantages. 1.5

Part B

- 2. (a) Explain any *two* properties of Fourier series. Also, discuss the effects of limited bandwidth on digital signals. 10
- (b) What is meant by PSD and ESD ? Differentiate between digital and analog signals. 5
- 3. (a) Make comparisons among Twisted pair, Coaxial and Fiber optic-cables. 5
- (b) Define the terms NRZ and delay distortion. Explain the operation of X.21 interface. 10
- 4. Differentiate simplex, half duplex and full duplex communication modes. Using an example. explain the concept of sliding window protocol and virtual circuits. 15

- 5. (a) Make differences between circuit switching and packet switching systems. 5
- (b) Define PSTN. Using schematics, explain the working, merits and demerits of ISDN. 10
- 6. (a) What is security in data communications ? Using an example, explain parity check, block sum check and frame check sequences used for Error detection. 10
- (b) Make comparisons between secret-key cryptography and public-key cryptography. 5
- 7. Differentiate between feedback, forward-error control approaches. Using an example, explain the operation and advantages of Huffman encoding in digital communication. 15