Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (R,S) Examinations April 2026 (2019 Scheme)

Course Code: CST372

Course Name: DATA AND COMPUTER COMMUNICATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks. Marks

1 Explain simplex, half-duplex, and full-duplex transmission modes with suitable examples. (3)

2 What are the important characteristics of a periodic analog signal? If a periodic signal is decomposed into five sine waves with frequencies of 200 Hz, 350 Hz, 500 Hz, 750 Hz, and 1000 Hz., what is its bandwidth? (3)

3 Differentiate between shielded twisted pair (STP) and unshielded twisted pair (UTP) cables. (3)

4 Define antenna gain and explain its importance. (3)

5 Define Pulse Code Modulation (PCM) and list its basic steps. (3)

6 Draw the signal waveform for AMI and Pseudoternary line coding for the bitstream 010010. (3)

7 Why is Statistical Time Division Multiplexing (TDM) more efficient than Synchronous TDM in using channel bandwidth? (3)

8 What is multiplexing? Name its main types and illustrate with a simple diagram. (3)

9 Explain the three stages involved in communication through a circuit-switched network. (3)

10 Write a short note on switched networks. (3)

PART B

Answer onefull question from each module, each carries 14 marks.

Module I

11 a) Explain attenuation and delay distortion in communication systems and describe their effects on signal transmission. (8)

b) How capacity of a system is determined in the presence of noise? We have a channel with a 1MHz bandwidth. The SNR for this channel is 63. Then calculate (6)

channel capacity.

OR

12 a) Describe the major types of transmission impairments in communication systems and explain their effects. (7)

b) Describe the characteristics and representation of periodic analog signals in communication systems. (7)

Module II

13 a) Explain the following wireless propagation modes briefly: (8)

i) Ground wave propagation

ii) Sky wave propagation

b) Differentiate between microwave and radio waves based on their features. (6)

OR

14 a) Describe about the physical properties and transmission characteristics of coaxial cable. (7)

b) Compare step index multimode and graded index multimode with diagram (7)

Module III

15 a) Explain the following digital modulation techniques: (8)

a) Phase Shift Keying (PSK)

b) Frequency Shift Keying (FSK)

b) Explain the techniques to convert analog data to analog signal with suitable diagrams. (6)

OR

16 a) Explain Delta Modulation (DM) with neat diagrams. (8)

b) Convert the bit stream 101010 into analog signals by using ASK ,BFSK and BPSK. (6)

Module IV

17 a) Explain Direct Sequence Spread Spectrum (DSSS) technique with neat diagrams. (7)

b) Explain the concept and working of Frequency Division Multiplexing (FDM) with a neat sketch. (7)

OR

18 a) Explain the working principle of Code Division Multiplexing (CDM) used in CDMA technology with a suitable example. (8)

b) What is interleaving? Explain. (6)

Module V

19 a) Explain Cyclic Redundancy Check (CRC) for error detection with a suitable example. (8)

b) Write about types of errors, detecting and correcting errors (6)

OR

20 a) Using CRC, given the dataword 1101011011 and the divisor 10011 (8)

i. Show the generation of the codeword at the sender site

ii. Show the checking of the codeword at the receiver site

b) Explain Two-Dimensional Parity Check with a suitable example. (6)

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