



## End Term (Even) Semester Examination May-June 2025

Roll no.....

Name of the Program and semester: BCA 4th

Name of the Course: Data Communications and Computer Networks

Course Code: TBC404

Time: 3 hour

Maximum Marks: 100

### Note:

- (i) All the questions are compulsory.
- (ii) Answer any two sub questions from a, b and c in each main question.
- (iii) Total marks for each question are 20 (twenty).
- (iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)

- a. Describe the different types of computer networks (LAN, WAN, MAN, and PAN) and provide one example of where each might be used. (CO1)
- b. Explain the purpose of using a layered architecture in network models? Name and briefly describe the functions of each layer in the OSI (Open Systems Interconnection) model. (CO1)
- c. Explain the process of converting an analog signal into a digital signal using Pulse Code Modulation (PCM). Describe the main steps involved in this conversion. (CO2)

Q2. (2X10=20 Marks)

- a. Explain the purpose of the Cyclic Redundancy Check (CRC) in error detection. Outline the steps involved in generating a CRC code for a given data frame. (CO2)
- b. Differentiate between connection less and connection-oriented services in computer network. (CO3)
- c. Describe its addressing format and explain the difference between a public IP address and a private IP address in IPv4. (CO3)

Q3. (2X10=20 Marks)

- a. Explain the different types of multiplexing? How they are helpful in computer networks? (CO1)
- b. How congestion control performed in computer networks? Explain why it is necessary and describe two common techniques used to manage congestion. (CO4)
- c. Differentiate between iterative and recursive DNS queries. Explain how each method works with the help of a simple example. (CO5)

Q4. (2X10=20 Marks)

- a. Explain the advantages of client server over the peer-to-peer architecture in computer networks? (CO1)
- b. Compare UDP Streaming and HTTP Streaming in multimedia communication. Highlight their key differences? (CO3)
- c. Explain the working of the Dynamic Host Configuration Protocol (DHCP) in a network. (CO3)

Q5. (2X10=20 Marks)

- a. Explain the concept of transmission impairment in communication systems. How does the Signal-to-Noise Ratio (SNR) affect the quality of a signal? (CO2)
- b. Describe the different types of guided media used for data and explain the advantages and disadvantages of each. (CO2)
- c. Describe key functions of the Transport Layer in the OSI model? (CO3)

### Note For the question paper setters:

- Question paper should cover all the COs of the course.
- Please specify COs against each question.