



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:I
Class:PG-I	Program:MCA
Branch Code:M.C.A.	Pattern:2022
Name of Course:Data Communication and Network	Course Code:MCA221003
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 2 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Marks CO

Question No. 1

- 1a) Explain the working of the following network devices: (6) CO1
Bridge, Switch, Router, Gateway, and Access Point.

Question No. 2

- 2a) Explain error detection and correction techniques used in data communication. Discuss Parity bits, (6) CO2
Hamming Code (11/12-bit), and CRC with examples.

Question No. 3

- 3a) Given a small network topology, apply static routing and dynamic routing to configure routes and (8) CO3
justify the better choice.

OR

- 3b) In a LAN environment, apply ARP protocol operation to explain how a system obtains the MAC (8) CO3
address of a destination host.

- 3c) Apply ICMP protocol to demonstrate how error reporting and network diagnostics are performed (8) CO3
using ping and traceroute

OR

- 3d) Apply Network Address Translation (NAT) to explain how multiple private IP addresses access the (8) CO3
Internet using a single public IP address. Use a suitable example.

Question No. 4

- 4a) Explain process-to-process delivery in the Transport Layer. Describe the services provided by the (8) CO4
Transport Layer with suitable examples.

OR

- 4b) What is socket programming? Explain the client-server model using sockets and outline the steps (8) CO4
involved in TCP socket communication.

- 4c) Explain connection establishment and connection release in Transport Layer protocols with a neat (8) CO4
diagram.

OR

- 4d) Explain multiplexing and demultiplexing in the Transport Layer with suitable examples. (8) CO4

Question No. 5

- 5a) Explain the Client–Server paradigm. Describe communication using TCP and UDP with suitable examples. (8) CO5

OR

- 5b) Explain the Domain Name System (DNS). Describe its hierarchical structure and name resolution process. (8) CO5

- 5c) Explain the working of the World Wide Web. Describe the role of HTTP in web communication. (8) CO5

OR

- 5d) Explain SMTP protocol. Describe the mail transfer process using a neat diagram. (8) CO5

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