(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2023 ONLY)

23UAI4A1

REG.NO

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY 2025

B.Sc.Computer Science with AI & ML(SF) **MAXIMUM MARKS: 75**

SEMESTER : IV **TIME : 3 HOURS**

PART - III

23UAI4A1 – FUNDAMENTALS OF COMPUTER NETWORKS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. Which of the following is a characteristic of a Wide Area Network (WAN)?

a) Covers a small geographical area

b) Used for home networking

c) Connects devices across large geographical areas

d) Limited to a single building

2. What is the primary function of the Data Link Layer in the OSI model?

a) Routing of packets

b) Transmission of raw bits over the physical medium

c) Establishment and termination of sessions

d) Error detection and correction in data transmission

3. The main purpose of routing algorithms in the Network Layer is _____

a) To detect errors in data transmission

b) To ensure reliable data transmission

c) To determine the best path for data transmission

d) To provide security during communication

4.What is the primary function of synchronization points in the Session Layer?

a) To define the structure of data packets

b) To manage the session between two communicating devices

c) To break data into smaller packets for transmission

d) To provide encryption and decryption services

5. Which protocol is used for sending electronic mail from the client to the server?

a) POP

b) SMTP

c) FTP

d) HTTP

(CONTD …. 2)

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. List the three types of network hardware.
7. Define guided transmission media.
8. What are the main functions of the Network Layer?
9. Brief the role of the Session Layer in the OSI model.
10. Give short notes on the purpose of the Domain Name System (DNS).

SECTION – B (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Discuss the main design issues for network layers.

(OR)

b) Differentiate connection-oriented and connectionless services.

12. a) What are the differences between geostationary, medium-Earth orbit, and low Earth-orbit satellites?

(OR)

b) Write about the significance of the electromagnetic spectrum in wireless transmission.

13. a) Explain the concept of Quality of Service (QoS) in networking.

(OR)

b) Write in detail about the working of routing algorithms in the Network Layer.

14. a) Compare the Presentation Layer and the Session Layer.

(OR)

b) How encryption and decryption work in the Presentation Layer?

15. a) Elaborate the difference between POP and IMAP in terms of email protocols.

(OR)

b) Explain functioning of SMTP, POP, and IMAP in email communication.

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K4 (Or) K5)

16. a) Describe the role of service primitives in network communication.

(OR)

b) Sketch the OSI Reference Model in detail.

17. a) Write in detail about the concept of error detection and correction in the Data Link Layer.

(OR)

b) Elaborate the wireless transmission methods with examples.

18. a) Explain IPv4 and IPv6 addresses, their structure, and the key differences in detail.

(OR)

b) Compare the elements of Transport Layer protocols with special reference to TCP.

19. a) Illustrate the interaction between the Session Layer and Transport Layer in the OSI model.

. **(OR)**

b) Describe the role of synchronization points in the Session Layer and their importance in data communication.

20. a) Illustrate the function and working of the HTTP and HTTPS protocols.

(OR)

b) Describe the role of Telnet protocol and its use in computer networks.

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Ethical paper