Printed Page:-04 **Subject Code**:- **ACSE0502**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: V - THEORY EXAMINATION (2023 - 2024)

Subject: Computer Networks

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* ***three Sections -A, B, & C.*** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION-A 20

1. Attempt all parts:-

1-a. Physical or logical arrangement of network is _____. (CO1) 1

(a) Topology
(b) Routing
(c) Networking
(d) Control

1-b. A term that refers to the way in which the nodes of a network are linked together. (CO1) 1

(a) network
(b) topology
(c) connection
(d) interconnectivity

1-c. When does the station B send a positive acknowledgement (ACK) to station A in Stop and Wait protocol? (CO2) 1

(a) only when no error occurs at the transmission level
(b) when retransmission of old packet in a novel frame is necessary
(c) only when station B receives frame with errors
(d) all of the above

1-d. Why do we require hamming codes? (CO2) 1

(a) Error correction

(b) Encryption only
(c) Decryption
(d) Bit stuffing

1-e. Class C IP address default mask address: (CO3) 1

(a) 255.0.0.0
(b) 255.255.255.0
(c) 255.255.0.0
(d) None

1-f. Transport layer aggregates data from different applications into a single stream before passing it to: (CO3) 1

(a) data link layer
(b) application layer
(c) physical layer
(d) network layer

1-g. Using which method in transport layer data integrity can be ensured? (CO4) 1

(a) Checksum
(b) Repetition codes
(c) Cyclic redundancy checks
(d) Error correcting codes

1-h. A _____ protocol provides logical communication between processes running on different hosts. (CO4) 1

(a) transport-layer
(b) session-layer
(c) network-layer
(d) application-layer

1-i. Which is not a application layer protocol? (CO5) 1

(a) HTTP
(b) SMTP
(c) FTP
(d) TCP

1-j. The conditional GET mechanism. (CO5) 1

(a) Imposes conditions on the objects to be requested
(b) Limits the number of response from a server
(c) Helps to keep a cache upto date
(d) None of the mentioned

2. Attempt all parts:-

2.a. What do you mean by NIC? (CO1) 2

2.b. Write a short note on Framing. (CO2) 2

2.c.	Define a point-to-point network and provide an example of its application. (CO3)	2
2.d.	What is flow control, and why is it important in data transmission? (CO4)	2
2.e.	Name four factors needed for a secure network. (CO5)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Discuss three main goals of computer networks and provide examples of how they are applied in everyday life. (CO1)	6
3-b.	Enlist the layers of OSI model in bottom up order in detail. (CO1)	6
3-c.	What are the various functions provided by Data link layer? (CO2)	6
3-d.	What is Medium Access Control (MAC) and why is it necessary in local area networks (LANs)? (CO2)	6
3.e.	Explain the Decbit algorithm for congestion avoidance. (CO3)	6
3.f.	Explain the TCP congestion control. (CO4)	6
3.g.	Explain the final delivery of email to the end user using pop3. (CO5)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Discuss various types of networks topologies in computer network. Also discuss various advantages and disadvantages of each topology. (CO1)	10
4-b.	Explain about Ethernet in detail. (CO1)	10

5. Answer any one of the following:-

5-a.	Define Error Correction. Name the various error correction techniques. Construct the Hamming code for data 1011 using even parity. (CO2)	10
5-b.	Define CSMA. Explain CSMA/CD and CSMA/CA protocols with suitable diagrams. (CO2)	10

6. Answer any one of the following:-

6-a.	Write short notes of the following: (i) Routing algorithms (ii) IPv6 Vs IPv4. (CO3)	10
6-b.	What is the difference between network layer delivery and transport layer delivery? Explain the congestion control techniques. (CO3)	10

7. Answer any one of the following:-

7-a.	Discuss in detail the process-to-process delivery mechanism facilitated by transport layer protocols TCP and UDP. Compare and Contrast their features, highlighting the advantages and disadvantages of each protocol. (CO4)	10
7-b.	Discuss the concept of window management in TCP and its role in optimizing data transmission efficiency. (CO4)	10

8. Answer any one of the following:-

8-a.	Explain the SMTP and HTTP. Give their uses, state strengths and weaknesses. (CO5)	10

8-b. Explain the simple network management protocol. List its various components and briefly explain each. (CO5) 10