Printed Page:-04 **Subject Code:- AMICSE0602**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech (Integrated)

SEM: VI - 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. Type of transmission media that uses copper wires to transmit data and is commonly used for cable television and broadband internet - (CO1) 1

(a) Optical fibre
(b) Coaxial Cable
(c) Twisted pair
(d) None of the above

1-b. Identify the switching that uses store and forward transmission? (CO1) 1

(a) Circuit switching
(b) Packet switching
(c) Both 1 and 2
(d) None of the above

1-c. Name the Protocol in which, the sender sends its frames one after another with no regard to the receiver. (CO2) 1

(a) Simplest
(b) Selective-Repeat ARQ
(c) Stop-and-Wait
(d) Go-Back-N ARQ

1-d. Token Ring is a data link technology for: (CO2) 1

(a) VAN

(b) MAN
(c) LAN
(d) both a and b above

1-e. Identify the characteristics of UDP: (CO3) 1

(a) Reliable delivery
(b) Connectionless
(c) Windowing
(d) Expectational acknowledgements

1-f. Select the type of IPv4 address which allows a host to send a message to all hosts (CO3) 1

(a) Unicast
(b) Multicast
(c) Broadcast
(d) None

1-g. Which of the following are transport layer protocols used in networking? (CO4) 1

(a) TCP and FTP
(b) UDP and HTTP
(c) TCP and UDP
(d) HTTP and FTP

1-h. What are the two broad categories of congestion control? (CO4) 1

(a) Open-loop and Closed-loop
(b) Open-control and Closed-control
(c) Active control and Passive control
(d) Active loop and Passive loop

1-i. The _____ translates internet domain and host names to IP address. (CO5) 1

(a) Routing information protocol
(b) Domain Name System
(c) Network time protocol
(d) Domain Naming Storage

1-j. The type of encryption that uses the different keys for both encryption and decryption is called.(CO5) 1

(a) Asymmetric-key encryption
(b) Symmetric-key encryption
(c) Hashing
(d) Digital signatures

2. Attempt all parts:-

2.a. With a suitable example define the various mode of communication. (CO1) 2

2.b. Explain how performance is improved in CSMA/CD protocol as compared to 2

CSMA. (CO2)

2.c. What are the various classes of IP addresses? (CO3) 2

2.d. Describe what is the need of port numbers? (CO4) 2

2.e. Define the URL in computer networking ? (CO5) 2

SECTION-B 30

3. Answer any five of the following:-

3-a. Describe the differences between the OSI model and the TCP/IP model. (CO1) 6

3-b. Discuss the different types of switching? Explain each type with examples. (CO1) 6

3-c. Explain Selective Repeat ARQ in detail. (CO2) 6

3-d. Discuss the functions of data link layer in a computer network. (CO2) 6

3.e. Explain classful and classless addressing with the help of suitable example.(CO3) 6

3.f. Compare and contrast UDP and TCP protocols.(CO4) 6

3.g. What do you understand by cryptography? Discuss in detail about the various types with an example.(CO5) 6

SECTION-C 50

4. Answer any one of the following:-

4-a. Explain the different types of network topologies, and list down the advantages and disadvantages of each? (CO1) 10

4-b. What is a protocol, and why is it necessary for computer networks? Discuss the different types of network protocols and their applications. (CO1) 10

5. Answer any one of the following:-

5-a. Explain and Implement the CRC method for both transmitter and receiver end with the help of a suitable example. (CO2) 10

5-b. Write short note on: 10
a) Reservation
b) Polling
c) Token Passing (CO2)

6. Answer any one of the following:-

6-a. Elaborate the concept of IPv4 with its format. Differentiate between IPv4 addresses and IPv6. Which is better and why? (CO3) 10

6-b. Explain Distance Vector Routing algorithm. How does it differ from Link state routing. Explain with suitable example. (CO3) 10

7. Answer any one of the following:-

7-a. What is congestion control? Explain Leaky bucket algorithm with its advantages and disadvantages. (CO4) 10

7-b. Write functions of Transport layer and define quality of service(QoS). Discuss the techniques used to improve QoS in Transport layer(CO4) 10

8. Answer any one of the following:-

8-a.	Discuss the Domain Name System (DNS) and how it operates at the Application Layer. What are the different components of DNS, and how do they work together? (CO5)	10
8-b.	Explain any three : (CO5) a. SMTP b. Telnet c. URL d. FTP e. VPN	10