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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

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

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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) 10
- a. SMTP
 - b. Telnet
 - c. URL
 - d. FTP
 - e. VPN

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