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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. Mode of communication that is used in telephone conversations? (CO1) 1
- (a) Simplex
 - (b) Half-Duplex
 - (c) Full-Duplex
 - (d) Multiplex
- 1-b. In a bus topology, how are the devices connected? (CO1) 1
- (a) In a circular loop
 - (b) In a hub-and-spoke configuration
 - (c) In a point-to-point connection
 - (d) In a daisy chain connection
- 1-c. Which method can detect two bit errors? (CO2) 1
- (a) Parity check
 - (b) Cyclic redundancy check
 - (c) Parity & Cyclic redundancy check
 - (d) None of the mentioned
- 1-d. Both Go-Back-N and Selective-Repeat Protocols use a _____. (CO2) 1
- (a) sliding window
 - (b) sliding frame
 - (c) sliding packet
 - (d) none of the above
- 1-e. The network layer takes the data from _____ and encapsulates them into packets for transmission (CO3) 1
- (a) network layer
 - (b) transport layer

- (c) application layer
(d) mac layer
- 1-f. Which of the following IPv4 addresses would be used in a private network?(CO3) 1
(a) 240.23.56.12
(b) 192.0.1.12
(c) 127.27.20.10
(d) 192.168.1.1
- 1-g. Transport layer protocols deals with _____ (CO4) 1
(a) Application to application communication
(b) Node to node communication
(c) Process to process communication
(d) Man to man communication
- 1-h. Which of the following is false with respect to UDP? (CO4) 1
(a) Connection-oriented
(b) Unreliable
(c) Transport layer protocol
(d) Low overhead
- 1-i. Electronic mail uses which Application layer protocol? (CO5) 1
(a) SMTP
(b) HTTP
(c) FTP
(d) SIP
- 1-j. DNS stands for _____ (CO5) 1
(a) Domain Net Service
(b) Domain Name System
(c) Domain Name Storage
(d) Domain Naming Storage

2. Attempt all parts:-

- 2.a. Discuss the purpose of different mode of communication. (CO1) 2
2.b. State and explain the functions of MAC. (CO2) 2
2.c. List two adaptive and two non adaptive routing algorithms?(CO3) 2
2.d. Define Congestion Control? (CO4) 2
2.e. Discuss the difference between HTTP and HTTPS in URL?(CO5) 2

SECTION B

30

3. Answer any five of the following:-

- 3-a. Differentiate between WAN and LAN. What are some examples of WAN technologies? (CO1) 6
3-b. Explain network topology and its types with proper diagram. (CO1) 6
3-c. Explain any two error detection and one correction Mechanisms used in computer network. (CO2) 6
3-d. Explain slotted Aloha. Prove that the channel utilization is 18% in ALOHA and 37% in 6

slotted ALOHA. (CO2)

- 3.e. Define and explain sub-netting with the help of example.(CO3) 6
- 3.f. Differentiate between Connection oriented and Connectionless services.(CO4) 6
- 3.g. Discuss the concept of symmetric and asymmetric key cryptography with an example.(CO5) 6

SECTION C

50

4. Answer any one of the following:-

- 4-a. Discuss OSI model with the help of diagram. (CO1) 10
- 4-b. Discuss the TCP/IP model. Also differentiate between OSI and TCP/IP model. (CO1) 10

5. Answer any one of the following:-

- 5-a. Define CSMA. Explain CSMA/CD and CSMA/CA protocols with suitable diagrams. (CO2) 10
- 5-b. Discuss the need of Sliding window protocols? Explain Selective repeat ARQ method with suitable diagram.(CO2) 10

6. Answer any one of the following:-

- 6-a. Explain IPV4 with format. Describe the reason why are we running out of IPv4 addresses? How does IPv6 solve this problem?(CO3) 10
- 6-b. State the differences between Distance Vector Routing and Link state routing. Explain any one with suitable example. (CO3) 10

7. Answer any one of the following:-

- 7-a. Explain Leaky bucket algorithm and discuss how does it differ from token bucket algorithm. (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. What do you understand by WWW, list some of the protocols used, and how do they facilitate communication between servers and clients? Explain the concept of DNS.(CO5) 10
- 8-b. Explain any three : (CO5) 10
- a. SMTP
 - b. FTP
 - c. VPN
 - d. URL
 - e. Telnet