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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 (2025 - 2026)

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:-

(1.1) Wireless transmission can be done via (K2,CO1)

1

- (a) Microwaves
- (b) Radio waves
- (c) Infrared
- (d) All of the mentioned

(1.2) Identify the example of a MAN?(K2,CO1)

1

- (a) A home network
- (b) The internet
- (c) City network
- (d) School network

(1.3) Select network device in network link layer?(K2,CO2)

1

- (a) Repeater
- (b) Hub
- (c) Router
- (d) None of the these

(1.4) List out the available error detection methods...(K2,CO2)

1

- (a) Signal
- (b) CRC
- (c) Delay
- (d) Station

(1.5) Name the utility used to trace the path between network hosts.(K2,CO3)

1

- (a) DHCP
 - (b) Ping
 - (c) Multicast
 - (d) Traceroute
- (1.6) State the IPv4 address category used to deliver messages to multiple hosts simultaneously.(K2,CO3) 1
- (a) Global unicast
 - (b) Multicast
 - (c) Unspecified
 - (d) Unique local
- (1.7) Which one of the following is not correct?(K2,CO4) 1
- (a) Application layer protocols are used by both source and destination devices during a communication session
 - (b) HTTP is a session layer protocol
 - (c) TCP is an application layer protocol
 - (d) All of the mentioned
- (1.8) Closed-Loop control mechanisms try to _____.(K2,CO4) 1
- (a) Remove after sometime
 - (b) Prevent before congestion occurs
 - (c) Remove after congestion occurs
 - (d) Prevent before sending packets
- (1.9) Technique used for data protection is (K2,CO5) 1
- (a) Data piracy
 - (b) Authentication
 - (c) Encryption
 - (d) Hacking
- (1.10) The type of encryption that uses the different keys for both encryption and decryption is called (K2,CO5) 1
- (a) Asymmetric-key encryption
 - (b) Symmetric-key encryption
 - (c) Hashing
 - (d) Digital signatures

2. Attempt all parts:-

- (2.1) Discuss IEEE standards .(K2,CO1) 2
- (2.2) Explain Token Passing controlled access protocol in details. 2
- (2.3) Mention the IP address range for Class A networks.(K2,CO3) 2
- (2.4) Write down the characteristics that define TCP services as stream delivery services.(K2,CO4) 2
- (2.5) Elaborate the advantages & disadvantages of secret key encryption.(K2,CO5) 2

SECTION-B

30

Answer any one of the following:-

(3.1)	Describe the differences between the OSI model and the TCP/IP model.(K2,CO1)	6
(3.2)	What are the key components of a computer network? Explain each one.(K2,CO1)	6
Answer any one of the following:-		
(3.3)	understand IEEE Standards in details.(K2,CO2)	6
(3.4)	Explain slotted Aloha. Prove that the channel utilization is 18% in ALOHA and 37% in slotted ALOHA.(K2,CO2)	6
Answer any one of the following:-		
(3.5)	Analyze the use of CIDR in conserving IP address space.(K4,CO3)	6
(3.6)	List the advantages of using link-state routing over distance vector routing.(K2,CO3)	6
Answer any one of the following:-		
(3.7)	Define algorithm. List down different types of Congestion Control algorithm.(K2,CO4)	6
(3.8)	Describe the process and conditions for terminating a connection in the transport layer using a diagram.(K2,CO4)	6
Answer any one of the following:-		
(3.9)	Discuss the advantages and disadvantages of using TELNET for remote login.(K2,CO5)	6
(3.10)	Define DNS and its requirement. Explain the features of it. (K2,CO5)	6
<u>SECTION-C</u>		50
4. Answer any <u>one</u> of the following:-		
(4.1)	Compare and contrast the different switching techniques based on their performance, cost, and implementation complexity.(K4,CO1)	10
(4.2)	Discuss the importance of protocols and standards in the OSI model of computer networks? (K2,CO1)	10
5. Answer any <u>one</u> of the following:-		
(5.1)	identify impact of performance and reliability on switching techniques.(K2,CO2)	10
(5.2)	If the 7 bit hamming code word received by receiver is 1011011 , assuming the even parity, state whether the received code word is correct or wrong? If wrong locate the bit having error?(CO2,K2)	10
6. Answer any <u>one</u> of the following:-		
(6.1)	Illustrate the role of ICMP in network diagnostics and error reporting.(K2,CO3)	10
(6.2)	List and explain the fields of an IPv4 header with their functions.(K2,CO3)	10
7. Answer any <u>one</u> of the following:-		
(7.1)	Explain the concept of Connection Management in detail with help of diagram.(K2,CO4)	10
(7.2)	Differentiate between Back Pressure and Choke Packet. (K4,CO4)	10
8. Answer any <u>one</u> of the following:-		
(8.1)	Discuss the various protocols that are related to transfer the files that operate at the Application Layer. What are the advantages and disadvantages of each protocol?(K2,CO5)	10

- (8.2) Explain how does e-mail reaches to destination. Explain in brief SMTP emphasizing the role and function of User Agent (UA) and Mail Transfer Agent(MTA).(K2,CO5) 10

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