Printed Page:-04 Subject Code:- BMCA0302

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MCA

SEM: III - THEORY EXAMINATION (2024 - 2025)

Subject: Computer Network

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. What is a computer network? (CO1,K1) 1

(a) A device used to display information on a computer screen

(b) A collection of interconnected computers and devices that can communicate and share resources

(c) A type of software used to create documents and presentations

(d) The physical casing that protects a computer's internal components

1-b. To avoid collisions on wireless networks, _____was invented. (CO1,K2) 1

(a) CSMA/CA

(b) CSMA/CD

(c) Either (a) or (b)

(d) Both (a) and (b)

1-c. A network administrator needs to configure a route between two networks where changes are rare. Which routing method should be used? (CO2, K4) 1

(a) Static routing

(b) OSPF

(c) RIP

(d) EIGRP

1-d. In Wi-Fi Security, which of the following protocol is more used? (CO2, K2) 1

(a) WPA

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(b) WPA2
(c) WPS
(d) Both A and C

1-e. In order to ensure the security of the data/ information, we need to _____ the data: (CO3,K2) 1

(a) Encrypt
(b) Decrypt
(c) Delete
(d) None of the above

1-g. Layer where multilayer switches operate in addition to Layer 2.(CO4,K2) 1

(a) Layer 1
(b) Layer 3
(c) Layer 4
(d) Layer 5

1-f. A computer _____ is a malicious code which self-replicates by copying itself to other programs. (CO3,K2) 1

(a) program
(b) virus
(c) application
(d) code

1-h. Topology commonly used in WANs to connect multiple sites in a star-like configuration (CO4,K2) 1

(a) Ring
(b) Bus
(c) Mesh
(d) Hub-and-Spoke

1-i. A critical role of the Core layer involves this task in a hierarchical design.(CO5,K4) 1

(a) Forwarding packets at high speed
(b) Access control for end users
(c) Providing redundancy for switches
(d) Filtering broadcast traffic

1-j. Redundancy in the Core layer is essential to ensure this. (CO5, K2) 1

(a) Network availability and minimal downtime
(b) User authentication
(c) Application layer management
(d) Simplified network topology

2. Attempt all parts:-

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2.a.	List the components of a data communication.(CO1, K2)	2
2.b.	Write the command to view the MAC address table on a Cisco switch? (CO2, K3)	2
2.c.	Define Denial of Service Attack. (CO3, K1)	2
2.d.	State the primary benefit of using MPLS in a WAN network.(CO4, K2)	2
2.e.	What are the main layers in a hierarchical network design? (CO5, K1)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Compare and contrast Hub, Switch and routers.(CO1,K4)	6
3-b.	Explain the working of Address Resolution Protocol (ARP) in computer networks. How does ARP help in resolving an IP address to a MAC address? (CO1,K2)	6
3-c.	Write the steps to configure a VLAN on a Cisco switch? (CO2,K3)	6
3-d.	What is DHCP, and how does it work to assign IP addresses to devices on a network? (CO2 ,K2)	6
3.e.	Differentiate between SQL Injection and Phishing. (CO3,K4)	6
3.f.	Differentiate between Internal BGP (iBGP) and External BGP (eBGP).(CO4, K4)	6
3.g.	Explain the roles and responsibilities of the Core Layer, Distribution Layer, and Access Layer.(CO5 ,K2)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	For given IP address 192.168.20.27/26, answer the following questions: (CO1, K3) i) Find the total number of valid hosts in this subnet. ii) Identify the first valid host address? iii) What is the broadcast address for this subnet? iv) Identify the last valid host address?	10
4-b.	Explain the OSI Model in detail, highlighting the functions of each layer.(CO1,K2)	10

5. Answer any one of the following:-

5-a.	Differentiate between static routing and dynamic routing, and in what scenarios would each be used? (CO2 , K4)	10
5-b.	What is NAT, and why is it used in networking? (CO2, K2)	10

6. Answer any one of the following:-

6-a.	Write short Notes on i) Network Automation ii) Device hardening iii) Intrusion Prevention systems. (CO3, K1)	10
6-b.	Explain the role and importance of firewalls in network security. What are the different types of firewalls and how do they differ in functionality. (CO3,K1)	10

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7. Answer any one of the following:-

7-a.	Explain the concept of multilayer switching and how it differs from traditional Layer 2 switching.(CO4 ,K4)	10
7-b.	Explain the concept of route redistribution and its purpose in modern networks.(CO4, K1)	10

8. Answer any one of the following:-

8-a.	Explain how documentation aids in preventing future network issues and assists other team members.(CO5 ,K1)	10
8-b.	Describe the benefits and applications of network virtualization in enterprise and data center environments.(CO5,K1)	10

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