Reg. No.															

Question Paper Code	13322

B.E. / B.Tech. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Fourth Semester

Computer Science and Engineering

(Common to Information Technology, Computer and Communication Engineering & Fifth Semester - M.Tech. - Computer Science and Engineering)

20CSPW401 - COMPUTER NETWORKS WITH LABORATORY

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)

Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	Which of the following is a characteristic of a Wide Area Network (WAN)? (a) Limited to a single building (b) High-speed and low-latency (c) Connects computers over a large geographic distance (d) Uses coaxial cables for most connections	*1*	*K1*	*CO1*
2.	Which of the following OSI layers is responsible for data encryption and decryption? (a) Physical Layer (b) Network Layer (c) Session Layer (d) Presentation Layer	*1*	*K1*	*CO1*
3.	In packet-switched networks, data is sent as: (a) Frames (b) Segments (c) Streams (d) Packets	*1*	*K1*	*CO1*
4.	Which of the following is a function of the Data Link Layer? (a). Routing of packets (b). Framing (c) IP Addressing (d) Flow control	*1*	*K1*	*CO2*
5.	In a wireless LAN, which standard governs communication? (a) IEEE 802.3 (b) IEEE 802.11 (c) IEEE 802.5 (d) IEEE 802.15	*1*	*K1*	*CO2*
6.	You are tasked with connecting different devices in a local network. Which of the following would you use for wired LANs? (a) Switch (b) Hub (c) Access Point (d) Router	*1*	*K1*	*CO2*
7.	Which of the following protocols is used for error reporting in the network layer? (a) IP (b) ICMP (c) TCP (d) UDP	*1*	*K1*	*CO3*
8.	When designing a network using IPv4. For a small office with 12 hosts, which of the following subnet masks would be the most efficient in terms of address allocation? (a) 255.255.255.0 (b) 255.255.255.240 (c) 255.255.255.248 (d) 255.255.255.128	*1*	*K1*	*CO3*
9.	If a host wants to determine whether it can reach another host on the same network, which ICMP message type would it send? (a) Echo Request (b) Destination Unreachable (c) Redirect (d) Time Exceeded	*1*	*K1*	*CO3*
10.	What is the default size of an IPv6 address? (a) 64 bits (b) 128 bits (c) 256 bits (d) 32 bits	*1*	*K1*	*CO4*
11.	What is the purpose of multicasting in networking? (a) To send a message to a single recipient (b)To send data to a specific group of devices (c) To broadcast data to all devices on a network (d) To provide error reporting in a Network	*1*	*K1*	*CO4*
12.	In a network running Distance Vector Routing, what happens if a router goes down? (a) The routers will immediately recalculate the shortest path using Dijkstra's algorithm (b) All routers will broadcast their complete routing tables to neighbors until convergence is achieved (c) The affected router will flood the entire network with error messages (d) Neighboring routers will update their hop counts based on the changes in distance	*1*	*K1*	*CO4*

13.	What is the port number for HTTP? (a) 21 (b) 80 (c) 110 (d) 443	1	K1	CO5
14.	An online gaming application is experiencing high latency due to packet retransmissions. Which transport layer protocol should be used to reduce this issue? (a) TCP (b) SCTP (c) FTP (d) UDP	1	K1	CO5
15.	Which of the following is a connectionless transport layer protocol? (a) TCP (b) SCTP (c) UDP (d) ICMP	1	K1	CO5
16.	A client is trying to establish a connection to a web server using port 443. Which transport layer protocol is likely being used in this scenario? (a) FTP (b) UDP (c) TCP (d) ICMP	1	K1	CO5
17.	Which protocol is primarily used for transferring files over the Internet? (a) HTTP (b) FTP (c) SMTP (d) SNMP	1	K1	CO6
18.	How does SSH enhance security in remote connections? (a) By using encryption for data transmission (b) By using plain text for datatransmission (c) By avoiding authentication (d) By using a different port number	1	K1	CO6
19.	If a website is down and users cannot access it, which of the following protocols might be primarily responsible? (a) HTTP (b) FTP (c) SMTP (d) DNS	1	K1	CO6
20.	Which of the following statements best evaluates the effectiveness of using HTTP over HTTPS for web transactions? (a) HTTPS is less secure than HTTP (b) HTTP is faster than HTTPS (c) HTTPS encrypts data, providing better security than HTTP (d) Both protocols offer the same level of security	1	K1	CO6

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21.	Define a computer network.	2	K1	CO1
22.	Differentiate between TCP and IP.	2	K2	CO1
23.	What is the purpose of addressing in the Data Link Layer?	2	K1	CO2
24.	Compare HDLC and PPP in terms of their features.	2	K2	CO2
25.	What is the role of subnetting in IPv4 addressing?	2	K1	CO3
26.	What is the need for fragmentation?	2	K2	CO3
27.	Why IPV6 preferred over IPV4?	2	K1	CO4
28.	Find the class of each address. (a) 11000001 10000011 00011011 111111111	2	K1	CO4
29.	What happens in the three way handshaking between any two devices?	2	K1	CO5
30.	What are the different levels in domain name space?	2	K1	CO6

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31.	a)	Differentiate between the TCP/IP protocol suite and the OSI model, highlighting their key differences and similarities.	10	K2	CO1
		OR			
	b)	Describe how switching techniques (circuit switching, packet switching) are utilized in modern networking.	10	K2	CO1
32.	a)	Describe how Media Access Control (MAC) is implemented in Ethernet networks.	10	K2	CO2

OR

	b)	Explain the function of connecting devices like hubs, switches, and routers in a LAN environment.	*10*	*K2*	*CO2*
33.	a)	Illustrate how packet switching is implemented in modern networks using an example of a packet-switched network.	*10*	*K3*	*CO3*
		OR			
	b)	Demonstrate how an IP packet is forwarded from source to destination, detailing the role of routers in the process.	*10*	*K3*	*CO3*
34.	a)	Compare the differences between Link State and Distance Vector routing algorithms in terms of efficiency, scalability, and convergence time.	*10*	*K2*	*CO4*
		OR			
	b)	Explain the performance of multicast routing compared to unicast in a large-scale video streaming application.	*10*	*K2*	*CO4*
35.	a)	What are the two broad categories of Congestion Control mechanisms? Briefly explain all the techniques.	*10*	*K2*	*CO5*
		OR			
	b)	Illustrate the packet format of Stream Control Transmission Protocol with its fields. How are the data transferred with four way handshaking?	*10*	*K2*	*CO5*
36.	a)	What is the format of an email? Explain the architecture of a mailing system.	*10*	*K2*	*CO6*
		OR			
	b)	List the elements of network management and explain the operation of SNMP protocol in detail.	*10*	*K2*	*CO6*