Reg. No.															

Question Paper Code	13510

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Sixth Semester

Electronics and Instrumentation Engineering

20ESCS601 - COMPUTER NETWORKS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which type of network is limited to a single building or campus? (a) WAN (b) MAN (c) LAN (d) PAN	1	K1	CO1
2.	What is the correct order of layers in the OSI model from bottom to top? (a) Application, Network, Transport, Data Link, Session, Physical, Presentation (b) Physical, Data Link, Network, Transport, Session, Presentation, Application (c) Data Link, Physical, Network, Session, Transport, Application, Presentation (d) Network, Data Link, Transport, Physical, Session, Presentation, Application	1	K1	CO1
3.	What is the primary function of Media Access Control (MAC)? (a) Encrypt data (b) Address application requests (c) Control how devices on a network gain access to the medium (d) Route packets across networks	1	K1	CO2
4.	IEEE 802.11 standard is associated with which technology? (a) Ethernet (b) Token Ring (c) Wi-Fi (d) Bluetooth	1	K1	CO2
5.	Which of the following is NOT a function of the network layer? (a) Routing (b) Addressing (c) Error Detection (d) Packet Forwarding	1	K1	CO3
6.	What is the size of an IPv6 address? (a) 32 bits (b) 64 bits (c) 128 bits (d) 256 bits	1	K1	CO3
7.	How many bytes are used for TCP and UDP port numbers? (a) 2 bytes (b) 4 bytes (c) 8 bytes (d) 1 bytes	1	K1	CO4
8.	UDP is preferred over TCP when: (a) Error checking is critical (b) Connection is needed (c) Low latency is required (d) File transfer is done	1	K1	CO4
9.	Which protocol is used to transfer web pages on the Internet? (a) FTP (b) HTTP (c) SMTP (d) SSH	1	K1	CO5
10.	_____ application layer protocol is used for secure remote login (a) Telnet (b) FTP (c) SSH (d) HTTP	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	Define a computer network. Mention any two of its advantages.	2	K1	CO1
12.	What is protocol layering? Give one benefit of using layered architecture.	2	K1	CO1
13.	Mention any two transmission media and explain them.	2	K2	CO1
14.	What is the purpose of link-layer addressing? Give an example.	2	K1	CO2
15.	Define DLC (Data Link Control) services. Mention any two services provided.	2	K1	CO2
16.	Infer the primary need of Bluetooth.	2	K2	CO2
17.	Differentiate between IPv4 and IPv6 addresses.	2	K2	CO3
18.	Summarize the role of ICMPv4 in network communication.	2	K2	CO3

19.	What are port numbers, and why are they important?		*2*	*K1*	*CO4*
20.	Illustrate any two differences between connection-oriented and connectionless protocols.		*2*	*K2*	*CO4*
21.	Outline the importance of Telnet.		*2*	*K2*	*CO5*
22.	List any two functions of the FTP protocol.		*2*	*K1*	*CO5*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain the OSI reference model in detail. Describe the function of each layer with a suitable diagram.	*11*	*K2*	*CO1*
		OR			
	b)	What is switching? Explain in detail the working of circuit-switched and packet-switched networks with diagrams.	*11*	*K2*	*CO1*
24.	a)	Discuss HDLC and PPP protocol in detail. Explain its frame structure and modes of operation.	*11*	*K2*	*CO2*
		OR			
	b)	Compare and contrast Ethernet and IEEE 802.11. Discuss their architecture, transmission methods, and applications.	*11*	*K2*	*CO2*
25.	a)	Describe the structure and classes of IPv4 addresses. Discuss the method of forwarding IP packets in detail.	*11*	*K2*	*CO3*
		OR			
	b)	Explain unicast routing algorithms in detail with examples. How do these algorithms impact the performance of routing?	*11*	*K2*	*CO3*
26.	a)	Illustrate and examine the Transmission Control Protocol (TCP) operations including connection establishment, flow control, and congestion control.	*11*	*K2*	*CO4*
		OR			
	b)	Explain the working of the User Datagram Protocol (UDP). Explain its header format and its characteristics.	*11*	*K2*	*CO4*
27.	a)	Explain the email system architecture. Evaluate the roles of SMTP, POP3, and IMAP.	*11*	*K2*	*CO5*
		OR			
	b)	Compare in brief about the architecture and working of the World Wide Web and the HTTP protocol.	*11*	*K2*	*CO5*
28.	a) (i)	Explain the various services provided by the transport layer. How are these services implemented in TCP and UDP?	*6*	*K2*	*CO4*
	(ii)	Discuss the Domain Name System (DNS) in detail with its hierarchy, components, and resolution process.	*5*	*K2*	*CO5*
		OR			
	b) (i)	Illustrate the importance of SCTP (Stream Control Transmission Protocol). How it differs from TCP and UDP?	*6*	*K2*	*CO4*
	(ii)	Explain the role of the application layer in the OSI model with examples of real-world protocols.	*5*	*K2*	*CO5*