St. Peter's Engineering College (Autonomous) Dullapally (P), Medchal, Hyderabad – 500100. QUESTION BANK									Dept.	:	AIML Academic Year 2025-26
Subject Code	:	AS22-66PC04	Subject	:	PRINCIPLES OF COMPUTER NETWORKS						
Class/Section	:	B. Tech.	Year	:	III	Semester	:	I			

BLOOMS LEVEL					
Remember	L1	Understand	L2	Apply	L3
Analyze	L4	Evaluate	L5	Create	L6

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UNIT-I

Part- A (Short Answer Questions)			
Q. No	Question (s)	BL	CO
1	Give the primary responsibility of the physical layer in the OSI model?	L1	C312.1
2	List the devices work for physical layer?	L1	C312.1
3	What does WAP stand for?	L1	C312.1
4	Which cable offers highest bandwidth?	L1	C312.1
5	What is the use of repeater?	L1	C312.1
6	What is the use of RJ45 connector?	L2	C312.1
7	ARPANET stands for?	L1	C312.1
8	Network access layer is combination of how many layers?	L1	C312.1
9	What is use of VPN?	L1	C312.1
10	What is synchronous and asynchronous communication?	L2	C312.1

Part- B (Long Answer Questions)			
Q. No	Question (s)	BL	CO
1	Explain the history of computer networks	L2	C312.1
2	Explain different types of network topologies.	L2	C312.1
3	Explain ISO-OSI reference model.	L2	C312.1
4	Explain TCP/IP reference model.	L2	C312.1
5	Discuss Guided Transmission media and its types.	L2	C312.1
6	Explain Wireless Application Protocols (WAP) with block diagram.	L2	C312.1
7	Describe how twisted pair cables are used for data transmission.	L2	C312.1

8	What is a Wireless LAN (WLAN)?	L1	C312.1
9	Explain the concept of a Packet Radio Network.	L2	C312.1
10	What is a Virtual Private Network (VPN)?	L1	C312.1
11	Discuss OSI model.	L2	C312.1
12	Explain TCP/IP model.	L2	C312.1
13	Describe OSI and TCP/IP model in comparison mode.	L2	C312.1
14	Explain transmission media.	L4	C312.1
15	Write a detailed note on Guided Transmission media.	L2	C312.1
16	Discuss Unguided Transmission media	L2	C312.1
17	Explain about Wireless Networks.	L3	C312.1
18	Describe segmentation and reassembly in the context of the transport layer. How does TCP handle it?	L2	C312.1
19	Explain Wireless Application Protocols (WAP).	L2	C312.1
20	Discuss WML and Virtual Private Network VPN Technology	L2	C312.1

UNIT-II

Part- A (Short Answer Questions)			
Q. No	**Question (s)**	**BL**	**CO**
1	What is the primary responsibility of the data link layer?	L1	C312.2
2	Which devices work for data link layer?	L1	C312.2
3	What is the use of hamming code?	L1	C312.2
4	What is MAC address?	L1	C312.2
5	What is the use of switch?	L1	C312.2
6	What is framing? Why is it necessary?	L2	C312.2
7	What is the difference between a switch and a hub?	L1	C312.2
8	Which protocols operate at the data link layer?	L1	C312.2
9	How does the data link layer ensure reliable data transfer?	L1	C312.2
10	What is flow control?	L2	C312.2

Part- B (Long Answer Questions)			
Q. No	**Question (s)**	**BL**	**CO**
1	Explain the significance of flow control and error control in data link protocols.	L1	C312.2
2	What is the difference between byte stuffing and bit stuffing?	L1	C312.2
3	How does Hamming Code help in error correction?	L1	C312.2

4	Explain the working of a simplex stop-and-wait protocol for a noisy channel with acknowledgment and timeout.	L1	C312.2
5	Differentiate between static and dynamic channel allocation.	L1	C312.2
6	Explain why is synchronization important in data link layer framing?	L1	C312.2
7	Describe the concept of framing in the data link layer.	L2	C312.2
8	Define multiple access protocols. Why are they important in networking?	L1	C312.2
9	Compare Pure ALOHA and Slotted ALOHA in terms of efficiency and collision handling.	L1	C312.2
10	Explain the purpose of CSMA/CA in wireless LANs like IEEE 802.11?	L2	C312.2
11	Explain simplex protocol for noisy and noiseless channel.	L2	C312.2
12	Explain Data link layer design Issues?	L2	C312.2
13	Cyclic Redundancy Check: Data = 100100, Generator Polynomial (Key) = x3 + x2 + 1 (1101)	L2	C312.2
14	Analyze A simplex stop and wait protocol for noisy channel?	L4	C312.2
15	Elaborate about Multiple access protocols: ALOHA?	L4	C312.2
16	Discuss about Wireless LANs?	L2	C312.2
17	Explain about A protocol using Go-Back-N.?	L3	C312.2
18	Elaborate The channel allocation problem in detail?	L4	C312.2
19	Explain Carrier sense multiple access protocols.?	L2	C312.2
20	Discuss Data link layer switching?	L2	C312.2

UNIT-III

Part- A (Short Answer Questions)			
Q. No	**Question (s)**	**BL**	**CO**
1	What is the main function of the network layer?	L1	C312.3
2	What does QoS stand for?	L1	C312.3
3	Define routing.	L1	C312.3
4	What is the purpose of congestion control?	L2	C312.3
5	What is flooding in routing?	L2	C312.3
6	What is meant by hierarchical routing?	L2	C312.4
7	What is distance vector routing?	L1	C312.4
8	Lit any one of the congestion control algorithms.	L1	C312.4
9	What is multicasting?	L2	C312.4
10	What is internetworking?	L1	C312.4

Part- B (Long Answer Questions)			
Q. No	**Question (s)**	**BL**	**CO**
1	Explain the significance of addressing and routing in network layer design.	L1	C312.3
2	How does packet forwarding differ from routing?	L2	C312.3
3	What is shortest path routing? Explain with an example.	L1	C312.3
4	Describe Dijkstra's algorithm for finding the shortest path.	L1	C312.3
5	What is flooding in routing? What are its advantages and disadvantages?	L1	C312.3
6	What is hierarchical routing? Why is it used in large networks?	L1	C312.3
7	What is the difference between broadcast and multicast routing?	L1	C312.4
8	Explain the working of distance vector routing algorithm.	L1	C312.4
9	Compare open-loop and closed-loop congestion control strategies.	L1	C312.4
10	Explain the role of protocol translation in internetworking?	L2	C312.4
11	Explain different design issues of the network layer.	L2	C312.3
12	Describe shortest path routing and flooding with examples.	L2	C312.3
13	Compare hierarchical routing and broadcast routing.	L4	C312.3
14	Explain distance vector routing with an example.	L2	C312.3
15	Discuss various congestion control algorithms.	L2	C312.3
16	Define QoS. Explain its importance and mechanisms.	L2	C312.4
17	Explain multicasting and its challenges in network routing.	L2	C312.4
18	Describe internetworking and the need for protocols.	L2	C312.4
19	Compare link-state and distance-vector routing.	L4	C312.4
20	Explain the network layer in the Internet.	L2	C312.4

UNIT-IV

Part- A (Short Answer Questions)			
Q. No	**Question (s)**	**BL**	**CO**
1	What is the primary responsibility of the transport layer in the OSI model?	L1	C312.5
2	Which protocol is connection-oriented?	L1	C312.5
3	What does TCP stand for?	L1	C312.5
4	Which transport layer protocol is used for real-time video streaming?	L1	C312.5
5	What is a socket?	L1	C312.5
6	Which field in the TCP header ensures reliable delivery?	L1	C312.5
7	UDP is considered a _____ protocol.	L1	C312.5
8	What is the size of the port number field in TCP/UDP headers?	L1	C312.5
9	What is the purpose of connection management in transport protocols?	L1	C312.5
10	What is a socket?	L1	C312.5

Part- B (Long Answer Questions)			
Q. No	**Question (s)**	**BL**	**CO**
1	Explain the concepts of: • Connection-oriented service • Connectionless service	L1	C312.5
2	Describe the role of flow control and error control in transport services.	L1	C312.5
3	What is the function of addressing at the transport layer?	L1	C312.5
4	What is a three-way handshake? Why is it used in TCP?	L1	C312.5
5	What is the function of TCP sequence numbers and acknowledgments?	L1	C312.5
6	What is UDP and what are its key characteristics?	L1	C312.5
7	Describe the UDP segment format.	L1	C312.5
8	Draw and explain the TCP segment structure.	L1	C312.5
9	In what situations is UDP preferred over TCP? Give examples.	L1	C312.5
10	A client and server communicate over TCP. Describe the sequence of steps for connection establishment and termination.	L2	C312.5
11	Explain the services provided by the transport layer. Illustrate with examples?	L2	C312.5
12	Compare and contrast TCP and UDP protocols with respect to reliability, connection management, and use cases?	L2	C312.5
13	Describe the various elements of transport protocols. Explain each in detail.?	L2	C312.5
14	Discuss the process of connection establishment and termination in TCP using a state diagram.?	L4	C312.5
15	Write a detailed note on flow control and error control mechanisms in the transport layer.	L2	C312.5
16	What is the three-way handshake process in TCP? Why is it necessary?	L2	C312.5
17	Explain the role of ports and sockets in the transport layer. Provide an example scenario?	L3	C312.5
18	Describe segmentation and reassembly in the context of the transport layer. How does TCP handle it?	L2	C312.5
19	Explain the differences between connection-oriented and connectionless services. Give suitable examples?	L2	C312.5
20	Discuss the importance of congestion control in TCP and describe any two techniques used?	L2	C312.5

UNIT-V

Part- A (Short Answer Questions)			
Q. No	**Question (s)**	**BL**	**CO**
1	What is the full form of DNS?	L1	C312.6
2	Which protocol is more secure: TELNET or SSH?	L2	C312.6
3	What does HTTP stand for?	L1	C312.6
4	Which protocol is used to send emails from a client to a server?	L1	C312.6
5	Which layer of the OSI model does the Domain Name System (DNS) operate at?	L1	C312.6
6	What is the default port number for HTTP?	L1	C312.6
7	What protocol is typically used to monitor and manage network devices?	L1	C312.6
8	Which two components are used in streaming multimedia over the web?	L2	C312.6
9	What is the main function of TELNET?	L2	C312.6
10	Name one protocol used for receiving emails.	L1	C312.6

Part- B (Long Answer Questions)			SR 22
Q. No	**Question (s)**	**BL**	**CO**
1	What is the Domain Name System (DNS) and why is it important?	L1	C312.6
2	Describe the role of the following DNS servers: • Root servers • Top-level domain (TLD) servers • Authoritative name servers	L1	C312.6
3	What is SNMP and what is its primary use?	L1	C312.6
4	Describe the basic components of SNMP: manager, agent, and MIB.	L1	C312.6
5	List and explain the different types of SNMP messages (e.g., Get, Set, Trap).	L1	C312.6
6	What are the major components of an email system?	L1	C312.6
7	Differentiate between SMTP, POP3, and IMAP.	L1	C312.6
8	What is TELNET? What are its key functions?	L1	C312.6
9	Explain how a web browser retrieves and displays a webpage.	L1	C312.6
10	Explain the different types of HTTP request methods (GET, POST, PUT, DELETE).	L1	C312.6
11	Explain the working of DNS. How does DNS resolve domain names to IP addresses?	L2	C312.6
12	Describe the architecture and functioning of SNMP. What are its main components?	L2	C312.6
13	Compare TELNET and SSH in terms of security, functionality, and use cases.	L4	C312.6
14	Discuss the process of sending and receiving emails. Explain SMTP, POP3, and IMAP roles.	L2	C312.6
15	Explain the architecture of the WWW and its relation to HTTP and browsers.	L2	C312.6
16	Describe HTTP protocol in detail with request and response format examples.	L2	C312.6
17	What are the challenges in streaming audio and video? Explain techniques to overcome them.	L2	C312.6
18	Illustrate the steps when a user enters a URL and presses Enter in the browser.	L3	C312.6
19	Discuss features of SSH and how it ensures secure communication over a network.	L2	C312.6
20	Write a detailed note on web protocols and services under application layer including DNS, HTTP, Email.	L2	C312.6