

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025
 Third Semester
Computer Science and Engineering (Cyber Security)
24SCPC302 -COMPUTER NETWORKS
 Regulations - 2024

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)
 Answer ALL Questions

	<i>Marks</i>	<i>K – Level</i>	<i>CO</i>
1. The OSI model consists of _____ layers. a) four b) five c) six d) Seven	1	K1	CO1
2. The topology provides a dedicated point-to-point link between devices are a) Mesh b) Star c) Ring d) Bus	1	K1	CO1
3. Specify the protocol is used for reliable transmission at the Data Link Layer. a) ALOHA b) CSMA/CD c) Stop and Wait d) UDP	1	K1	CO2
4. In CSMA/CD, the abbreviation CD stands for _____. a) Code Division b) Collision Detection c) Channel Division d) Carrier Detection	1	K1	CO2
5. _____ routing algorithm uses Dijkstra’s shortest path method. a) Link State b) Distance Vector c) Flooding d) Bellman-Ford	1	K1	CO3
6. IPv6 uses address size of _____. a) 32 bits b) 64 bits c) 128 bits d) 256 bits	1	K1	CO3
7. The protocol provides connection-oriented transport services are a) UDP b) TCP c) IP d) ICMP	1	K1	CO4
8. Flow control in TCP is achieved using _____. a) ARP b) Sliding Window c) Hop Count d) SNMP	1	K1	CO4
9. DNS translates _____. a) IP to MAC b) MAC to IP c) Domain name to IP d) IP to URL	1	K1	CO5
10. Which technology enables programmability in network control planes? a) IoT b) SDN c) 5G d) IDS	1	K1	CO6

PART - B (12 × 2 = 24 Marks)
 Answer ALL Questions

11. Explain LAN and WAN with examples.	2	K2	CO1
12. Compare between OSI and TCP/IP models.	2	K2	CO1
13. List two types of Error Detection techniques.	2	K1	CO2
14. Justify the concept of sliding window protocol.	2	K2	CO2
15. Explain sub-netting and super-netting.	2	K2	CO3
16. The working of Distance Vector routing algorithm. Justify.	2	K1	CO3
17. State the differences between TCP and UDP.	2	K1	CO4
18. Outline the congestion control in TCP using any one mechanism.	2	K2	CO4
19. What is DNS? Mention its importance.	2	K1	CO5
20. Describe any two functions of HTTP.	2	K2	CO5
21. Define SDN and list its advantages.	2	K1	CO6
22. What are the ethical issues in network design?	2	K1	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23. a) i) Draw neat diagram of the OSI reference model and apply it to explain the functions of each layer 7 K2 CO1
ii) Explain about the Physical layer. 4 K2 CO1
- OR**
- b) i) Compare circuit switching and packet switching with suitable examples. 7 K2 CO1
ii) Illustrate different network topologies with diagrams. 4 K2 CO1
24. a) Apply the concepts of Stop-and-Wait and Sliding Window protocols to compute transmission efficiency for a data link transmitting frames of 2000 bits over a 1 Mbps channel with a 20ms propagation delay. 11 K3 CO2
- OR**
- b) Analyze the working principle of the CSMA/CD protocol with the help of a neat diagram. 11 K3 CO2
25. a) Solve error detection and correction techniques to a given data frame using the Hamming code method. Illustrate the process with an example. 11 K3 CO3
- OR**
- b) Apply your understanding of IEEE 802.11 (Wi-Fi) standard to explain its architecture, frame format, and working principles. 11 K3 CO3
26. a) Construct the concept of IPv4 addressing and sub-netting to calculate the subnet address, broadcast address, and number of hosts for a given IP block. 11 K3 CO4
- OR**
- b) Utilize knowledge of the Link State Routing Algorithm to explain its working principle with a suitable example. 11 K3 CO4
27. a) Compare between Distance Vector and Link State routing algorithms in terms of convergence, complexity, and scalability. 11 K4 CO5
- OR**
- b) Analyze the operation of ARP and ICMP protocols, and interpret how they assist in efficient network communication. 11 K4 CO5
28. a) Infer the TCP three-way handshake mechanism with a timing diagram and discuss its significance in reliable data transmission. 11 K4 CO6
- OR**
- b) Classify between Flow Control and Congestion Control, and evaluate their impact on transmission performance. 11 K4 CO6