

B.Sc Sem.-5 Examination**CC 302****Computer Science****November-2024****Time : 2-30 Hours]****[Max. Marks : 70**

- Q1(A) Explain the concept of a computer network and describe three primary purposes it serves in modern society. (7)
- Q1(B) Describe the OSI model and its significance in networking. Provide a brief explanation of each layer's primary function. (7)
- OR
- Q1(A) A network administrator finds that two devices on different subnets cannot communicate. Despite checking the cabling, switch configurations, and routing tables, the issue persists. What else could be causing this problem, and how would you troubleshoot it? (7)
- Q1(B) Explain the role of IP addressing in a network. Distinguish between IPv4 and IPv6, highlighting at least two main differences. (7)
- Q2(A) Compare and contrast three common network topologies: star, bus, and mesh. Discuss their advantages and disadvantages. (7)
- Q2(B) Explain the concept of hybrid topology and give an example of a situation where it would be advantageous over a single topology. (7)
- OR
- Q2(A) Illustrate how a ring topology works and discuss two situations where it is preferable to other topologies. (7)
- Q2(B) What is the difference between physical topology and logical topology? Provide examples of each and explain how they can differ in a network. (7)
- Q3(A) Describe the differences between a Local Area Network (LAN), a Metropolitan Area Network (MAN), and a Wide Area Network (WAN). Provide examples of each. (7)
- Q3(B) Explain the concept of a Virtual Private Network (VPN). How does it secure data transmission over public networks? (7)
- OR
- Q3(A) What are the key characteristics of a Wireless LAN (WLAN), and how does it differ from a wired LAN in terms of structure and functionality? (7)
- Q3(B) Suppose you have a network spread over a large area that is not physically contiguous, but it behaves like a LAN. What type of network is this, and what technology would likely be used to implement it? (7)
- Q4(A) Explain the seven layers of the OSI model and provide a primary function for each layer. (7)
- Q4(B) Describe three key differences between the OSI model and the TCP/IP model. Provide examples where relevant. (7)
- OR
- Q4(A) Why is the OSI model still relevant today, even though the TCP/IP model is more commonly used in real-world networking? (7)

- Q4(B) In the OSI model, where does data encryption occur? Is it limited to a single layer, and why or why not? Discuss how encryption works at different layers. (7)
- Q5 MCQ Attempt any seven out of twelve.(2 Marks each) (14)**
- 1) Which OSI layer is responsible for error detection and correction?
A) Application Layer B) Network Layer C) Data Link Layer
D) Transport Layer
 - 2) What type of network topology has each device connected directly to a central hub or switch?
A) Mesh Topology B) Star Topology C) Ring Topology D) Bus Topology
 - 3) In the OSI model, which layer manages end-to-end data transport between devices?
A) Data Link Layer B) Network Layer C) Transport Layer D) Session Layer
 - 4) Which protocol provides the IP address to a host automatically on a network?
A) HTTP B) DNS C) DHCP D) FTP
 - 5) What type of IP address is used to send packets to all devices on a network?
A) Unicast B) Broadcast C) Multicast D) Anycast
 - 6) In which type of network does each connected device act both as a client and as a server?
A) Peer-to-peer Network
B) Client-server Network
C) Hybrid Network
D) Cluster Network
 - 7) Which layer of the OSI model converts data into electrical signals or light pulses?
A) Application Layer B) Network Layer C) Data Link Layer D) Physical Layer
 - 8) Which of the following uses packet-switching technology?
A) Ethernet B) Frame Relay C) Circuit Switching D) TCP/IP
 - 9) What does the term "latency" in networking refer to?
A) Data transmission speed B) Delay in data transmission
C) Data error rate D) Bandwidth capacity
 - 10) Which protocol translates a domain name to an IP address?
A) DHCP B) FTP C) DNS D) SNMP
 - 11) Which layer in the TCP/IP model corresponds with the Application, Presentation, and Session layers in the OSI model?
A) Internet Layer B) Transport Layer C) Application Layer
D) Network Interface Layer
 - 12) Which type of attack involves overwhelming a server with excessive requests to make it unavailable to users?
A) Phishing Attack
B) Denial of Service Attack
C) Man-in-the-Middle Attack
D) SQL Injection

ALL THE BEST