**Computer Networks**

1. What is the OSI model? Explain its layers and their functions.
2. Differentiate between OSI and TCP/IP models.
3. What is the difference between a switch, hub, and router?
4. Explain the concept of IP addressing. What is the difference between IPv4 and IPv6?
5. What is subnetting? Why is it used? Explain with an example.
6. What is the difference between TCP and UDP protocols? Give suitable examples of each.
7. Define MAC address and IP address. How are they different?
8. What is DNS (Domain Name System) and how does it work?
9. Explain HTTP and HTTPS protocols. What is the role of SSL in HTTPS?
10. What is the function of ARP (Address Resolution Protocol)?
11. Explain how data is transmitted over a network (encapsulation & decapsulation process).
12. What is a firewall? Explain its types and role in network security.
13. What are the differences between circuit switching and packet switching?
14. What is a socket in computer networking? Explain its role in communication.
15. Explain the three-way handshake process in TCP.
16. What is latency, bandwidth, and throughput? How are they related?
17. Differentiate between unicast, multicast, and broadcast communication.
18. What is DHCP? How does it assign IP addresses dynamically?
19. What is the purpose of the transport layer in the OSI model?
20. What are congestion control and flow control in networking? How do they differ?