Subject: Computer Networks (BCSE III – 2nd Semester)

CO1 Understand the layered architecture and IEEE standards and explain the contemporary issues and importance of MAC sublayer of the Data Link Layer, network layer, transport layer and application layer of TCP-IP model, and how they can be used to assist in network design and implementation.

CO2 Understand the protocols of MAC sublayer of the Data Link Layer and describe the IEEE standards for Ethernet (802.3) and wireless LAN (802.11).

CO3 Understand internetworking principles and explain algorithms for multiple access, routing and different networking techniques and able to analyze the performance of these algorithms.

CO4 Explain the protocols in Transport Layer and able to design network applications using these protocols.

CO5 Explain the protocols in application layer and how they can be used to design popular internet applications.

COs	**Marks**
CO1	**10**
CO2	**30**
CO3	**30**
CO4	**20**
CO5	**10**

Class Test Questions

CO1 (Layered architecture, network design and IEEE standards)

1. Why there is no need of CSMA/CD in today's Ethernet? Explain it. Explain how the hidden terminal problem is handled by 802.11
2. What is a transparent bridge? What happens if there is a collision during the handshaking period in a wireless network?
3. How is hub related to a repeater? Explain the format of 802.3 MAC frame. Explain two MAC sublayers of IEEE 802.11.

CO2 (MAC Layer)

4. Explain the pure ALOHA and discuss the performance in terms of throughput. How slotted ALOHA can improve the performance?
5. Explain the CSMA/CD for medium access control. Explain three strategies of CSMA/CA to avoid collisions on wireless networks.
6. What are the problems if the available bandwidth of a link is shared in time or frequency? Explain the CDMA technique to overcome these issues.
7. Explain the multiple secondary communication in Bluetooth. What are the two types of links between a Bluetooth primary and a secondary.

8. What is the difference between BSS and ESS? Describe the layered architecture of Bluetooth. What is GSM?

CO3 (Network Layer)

9. What strategies have been derived for the transition of IPv4 to IPv6? Draw the IP header. Which fields of the IP header changes from router to router?
10. Explain the Routing Information Protocol. What are its main shortcomings? How these issues are handled.
11. Explain the Open Shortest Path First protocol. What are the different types of links used in OSPF?
12. Explain the main steps of path vector routing. What is the optimum path in path vector routing?
13. Explain the border gateway protocol. What is a session in BGP? What are two types of sessions used here?

CO4 (Transport Layer)

14. Describe the user datagram format. Why UDP provides connectionless services? Why UDP is a suitable protocol for multicasting? Why FTP cannot use UDP, but Trivial FTP can use it?
15. Explain the design and main steps of DNS service.
16. Describe the three-way handshaking for connection establishment in TCP. How TCP handles out-of-order segments?
17. Compare UDP, TCP and SCTP. Explain mulitstream service and multihoming service of SCTP.
18. Explain the flow control and error control mechanisms of TCP.

CO5 (Application Layer)

19. Explain the design and main steps of remote logging service.
20. Explain the design and main steps of file transfer service.
21. Explain the design and main steps of e-mail service.