Assignment No. 1

Unit 1:Introduction to Network

Q.1 Compare and Contrast the OSI and TCP/IP Network Models.

Q.2 Explain the various Network Topologies and Transmission Modes, and how they influence the design and performance of different Types of Networks (LAN, WAN, MAN).

Assignment No. 2

Unit 2:Network LAN Technologies

Q.1 Describe the evolution of Ethernet technologies, comparing and contrasting their key characteristics, and explain how Wireless LANs differ in their operational principles at the Data Link Layer.

Q.2 Explain the significance of Error Detection and Correction at the Data Link Layer, detailing various techniques and the mechanisms of Automatic Repeat Request (ARQ) protocols.

Assignment No. 3

Unit 3: Network Devices

Q.1 Compare and contrast the functions and operational principles of various Network Devices (Hub, Switch, Router, Bridge, Gateway, Repeater, Modem) in a networked environment, highlighting their respective OSI layer of operation.

Q.2 Explain the significance of IP Addressing and Subnetting in the Network Layer, detailing the transition from IPv4 to IPv6, and the role of ARP in supporting IP communication.

Assignment No. 4

Unit 4:Transport Layer

Q.1 Compare and Contrast the Transmission Control Protocol (TCP) and User Datagram Protocol (UDP), explaining their suitability for different types of applications and their roles in Process-to-Process Delivery.

Q.2 Explain the concept of Network Congestion, detailing various Congestion Control mechanisms at the Transport Layer and the role of Quality of Service (QoS) in managing network performance.

Assignment No. 5

Unit 5:Application Layer

Q.1 Explain the Domain Name System (DNS) as a fundamental Application Layer service, detailing its architecture and how it functions to resolve domain names into IP addresses in the Internet.

Q.2 Compare and contrast the functionalities and operational principles of key Application Layer protocols for common Internet services, specifically SMTP, POP3, FTP, and HTTP, outlining their roles in web Browse, file transfer, and email communication.