Module 1

- What are the design issues for the Layers in networking? Explain ISO /OSI reference model with diagram.
- Explain TCP/IP reference model and Compare with OSI model
- What is topology? Explain types of topologies.
- Explain repeater, hub, bridge, switch, gateway.
- Explain LAN, WAN, MAN.
- Compare and contrast circuit switching and packet switching.
- classify transmission media and compare them
- Discuss different types of guided media in detail
- What are guided unguided transmission media
- Explain channel allocation problem

Module 2

- Explain different framing methods. what are the advantages of variable length frame over fixed length frame?
- Explain design issues of data link layer. Explain sliding window protocol selective repeat.
- Data link protocols almost always put the CRC in a trailer rather than in a header. Why? Give the data words 1101010110 show generation of CRC at sender site.
- what is error detection and correction? Explain with CRC.
- Explain Go-back-N protocol.
- Explain advantages of selective repeat over Go Back N. Compare the performance.
- Explain any two collision free protocols.
- Explain CSMA Protocols. Explain how collisions are handled in CSMA/CD.
- Explain the purpose of flow control and error control from DLL perspective.
- short note on Aloha and its types.

Module 3

- Explain different network layer functions.
- Explain different network layer services.
- Explain different network layer design issues.
- Explain the concept of connectionless and connection-oriented services.
- Explain the concept of connectionless and connection-oriented protocol with example
- List and explain different types of addresses used in IPV4
- Explain IPV4 classful addressing and state its disadvantages
- Explain classful addressing
- Explain in short subnetting
- An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows
- Explain classless inter domain routing (CIDR)
- Draw and explain ipv4 header
- Explain the purpose of fragmentation of packet and how it is done

- Write a short note on NAT
- Explain IPv6 protocol
- Draw and explain IPv6 header
- Compare IPv4 and IPv6

Module 4

- Explain the features of TCP
- Draw and explain TCP Header format
- The following is a dump of a TCP header in hexadecimal format:
  05320017 00000001 00000000 500207FF 00000000
- Explain with diagram the connection establishment and connection termination in TCP using Three-way handshaking
- Write short note on flow control using TCP
- Explain TCP Congestion control policy
- List and explain various timers in TCP
- How UDP is different from TCP for data transmission

Module 5

- Elaborate CISCO -SONA architecture in detail
- Explain in brief CISCO PPDIOO network design methodology
- Categorize the network design approach in a Company Management Structure
- Sketch three–tier hierarchical network model

Module 6

- What is SDN? Explain the concept of control plane and data plane with respect to SDN
- Elaborate the architecture of Nox and Pox controller of SDN with their comparison
- Summarize the working of OpenFlow
- Explain NOX architecture
- Describe Fundamental characteristics of SDN
- Compare and contrast SDN and Traditional Networking
- Explain advantages of POX over NOX
- Compare and contrast control plane and data plane.
- Describe key architectural components of Software Defined Networking.