

Duration: 3 Hrs.

Total Marks : 80

- N.B.:** 1) Question No. 1 is Compulsory.
 2) Attempt any three questions, from remaining five questions.
 3) Figure to the right indicates full marks

- Q.1.** a) State and explain the design issues of OSI layers. **5**
 b) Compare the performance characteristics of coaxial, twisted pair and fiber optic transmission media. **5**
 c) List the types of Error Detection and Correction techniques with the help of example. **5**
 d) Compare the Network layer protocols IPv4 and IPv6. **5**
- Q.2.** a) Explain ISO-OSI reference model with diagram. **10**
 b) Illustrate TCP protocol for establishing a connection using 3-way handshake technique in the transport layer. **10**
- Q.3.** a) What is the throughput of the system both in Pure ALOHA and Slotted ALOHA, if the network transmits 200 bits frames on a shared channel of 200 Kbps and the system produces?
 a) 1000 frames per second **10**
 b) 500 frames per second
 b) Analyze the steps involved in Token and Leaky bucket algorithm by quoting the need and benefit in the network layer with suitable diagrams. **10**
- Q.4.** a) Explain Linked State Routing with the help of example. **10**
 b) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). **10**
 The ISP needs to distribute these addresses to three groups of customers as follows:
 a. The first group has 64 customers; each need 256 addresses.
 b. The second group has 128 customers; each need 128 addresses.
 c. The third group has 128 customers; each need 64 addresses.
 Design the subblocks and find out how many addresses are still available after these allocations.
- Q.5.** a) What is Congestion control? Explain Open loop and Close loop Congestion control. **10**
 b) Draw and summarize the structure of HTTP request and response. **10**
- Q.6.** Write Short Note on (Any Two) **20**
 (a) Address Resolution Protocol (ARP)
 (b) Classful and Classless Addressing
 (c) Distance Vector Routing (DVR)
