

- N.B. : (1) Question No.1 is compulsory  
 (2) Write any three questions from Q. 2 to Q.6.  
 (3) Draw a neat diagram if necessary.

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- Q1 Solve any four 20**
- Describe classful addressing.
  - Explain the working of HFC.
  - Compare star, bus, and mesh topology.
  - Compare Telnet and SSH.
  - Describe various networking devices in computer networks and map them to their respective OSI model layers.
- Q2 a What is the purpose of ICMP? Explain all message types of ICMP. 10**
- b Explain Pure and Slotted ALOHA with neat diagrams. 10**
- Q3 a Explain wired transmission media and compare them. 10**
- b An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP needs to distribute this address to two groups of customers as follows: 10**
- The first group has 200 medium-sized businesses: each needs 128 addresses.
  - The second group has 400 small business customers: each needs 16 addresses.
  - The third group has 2048 households: each needs 4 addresses
- Design the subblocks and determine how many addresses are available after these allocations.
- a Differentiate between TCP and UDP. 10**  
 The following is the dump of the UDP header in hexadecimal format. 0632 000D 001C E217
- Q4 a. What is the source port number?**
- b. What is the destination port number?**
- c. What is the total length of the user datagram?**
- d. What is the length of data?**
- e. Is the packet directed from the client to the server or vice versa?**
- b Explain ARQ error control mechanisms and compare them. 10**
- a Draw the IPV4 header and explain the meaning of various associated fields. 10**
- Q5 Differentiate between IPV4 and IPV6**
- b Explain Distance Vector Routing. What is the Two-Node Instability Problem, and how can it be mitigated? 10**
- Q6 Write a short note on (Solve any 2) 20**
- TCP Header Format
  - DHCP
  - CSMA/CD