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**
a	Describe classful addressing.	
b	Explain the working of HFC.	
c	Compare star, bus, and mesh topology.	
d	Compare Telnet and SSH.	
e	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: a. The first group has 200 medium-sized businesses: each needs 128 addresses. b. The second group has 400 small business customers: each needs 16 addresses. c. The third group has 2048 households: each needs 4 addresses Design the subblocks and determine how many addresses are available after these allocations.	**10**

Q4 a	Differentiate between TCP and UDP. The following is the dump of the UDP header in hexadecimal format. 0632 000D 001C E217 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?	**10**
b	Explain ARQ error control mechanisms and compare them.	**10**

Q5 a	Draw the IPV4 header and explain the meaning of various associated fields. Differentiate between IPV4 and IPV6	**10**
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**
a	TCP Header Format	
b	DHCP	
c	CSMA/CD	

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