

Instructions to candidates

Answer any **FIVE FULL** questions.

Missing data, if any, may be suitably assumed.

- 1A. With a neat diagram explain the functionalities of each layer in the TCP/IP protocol suite.
- 1B. Explain any three forwarding techniques used to place a packet in its route to the destination.
- 1C. Suppose that the slotted ALOHA protocol is used to share a 56kbps channel. The frames are 1000 bits long. Find the maximum throughput of the system in frames/second. [5+3+2]
- 2A. Explain the steps involved in Link State Routing. List any two drawbacks of this dynamic routing method.
- 2B. Show the updated forwarding table for the bridges after the following communication: S8 to S1, S6 to S5, S4 to S2, S7 to S8, S10 to S9 and S4 to S8 in the network given in Figure Q.2B.
- 2C. State the differences between datagram and virtual circuit subnets. [5+3+2]

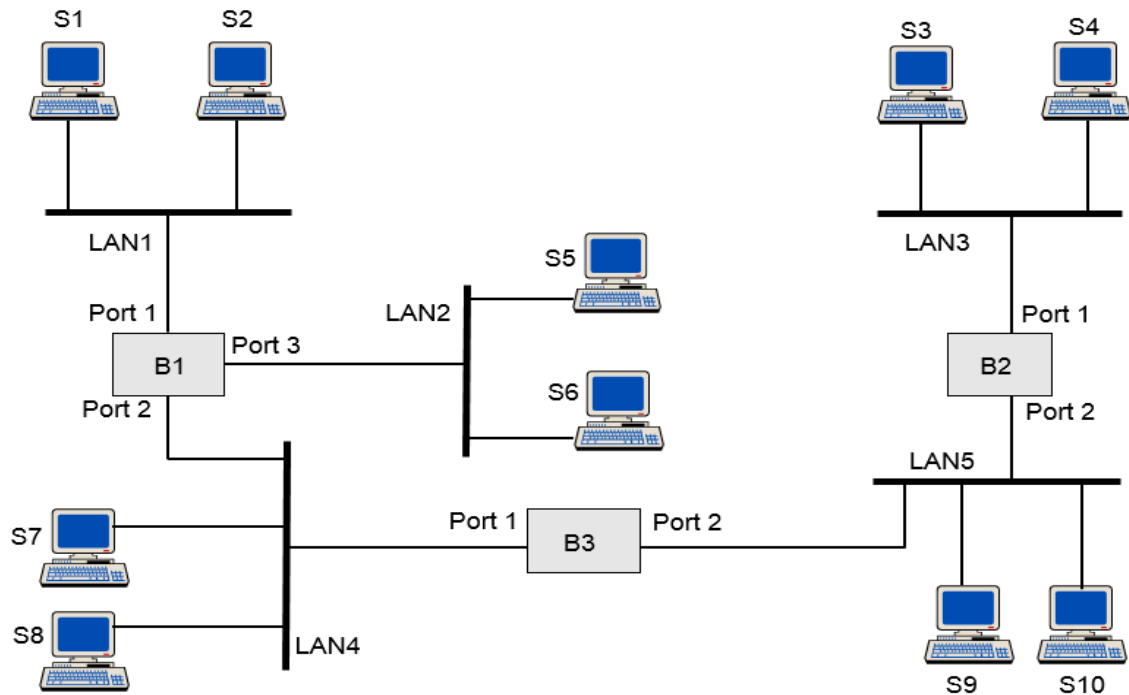


Figure Q.2B.

- 3A. An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to customers as follows:
 - a. The first group has 200 medium size businesses; each needs 128 addresses.
 - b. The second group has 400 small businesses; each needs 16 addresses.
 - c. The third group has 2000 households; each needs 4 addresses.
 Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.

- 3B. Calculate the difference in header overhead between the DIX Ethernet frame and an IEEE 802.3 frame with SNAP encapsulation. Write the frame format for IEEE 802.3.
- 3C. Which algorithm is used to avoid the loops in a network which is inter-connected by bridges? Write the steps involved in the algorithm. [5+3+2]
- 4A. Explain the silly window syndrome at sender side and receiver side. What are the methods through which it can be prevented?
- 4B. Explain the seven steps in the ARP Process.
- 4C. In a datagram, the M bit is zero, the value of HLEN is 5, the value of total length is 200, and the offset value is 200. What is the number of the first byte and number of the last byte in this datagram? Is this the last fragment, the first fragment, or a middle fragment? [5+3+2]
- 5A. With a neat diagram and an example, explain the three phases of congestion policy used in TCP.
- 5B. Explain source quench and destination unreachable messages used in ICMP for error reporting with necessary schematic. What is the minimum size of an Ethernet frame that carries an IP packet which in turn carries an ICMP packet?
- 5C. What is the purpose of RIP message? [5+3+2]
- 6A. Explain the various operations that are carried out in IGMP.
- 6B. How is SCTP different from TCP?
- 6C. With neat diagram explain the multiplexing/ demultiplexing concept in UDP [5+3+2]
