

- (10%) 1. Please describe the operation model and features of Internet Protocol (IP).
- (10%) 2. What is "sliding window" mechanism for flow control ?
- (10%) 3. Please describe the flow control mechanism used in the Transport Control Protocol (TCP).
- (10%) 4. Please describe the CSMA/CD (Carrier Sense Multiple Access with Collision Detection) protocol employed in the IEEE 802.3 Ethernet.
- (10%) 5. Let a denote the propagation delay between the farthest two nodes of an Ethernet (Fast Ethernet/Gigabit Ethernet) and L denote the minimum transmission time of a frame. Which of the following is correct ? Why ?
- (a) $L = a$,
 - (b) $L \geq 2a$,
 - (c) $L \leq 2a$,
 - (d) $L = 4a$.
- (20%) 6. Typically, the network configuration of a computer in the Internet includes its IP address, subnet mask, Domain Name Server (DNS) IP address and "default router" IP address. Please describe when and how the computer will communicate with the default router. What happen if we set the subnet mask as (a) 255.255.255.255, (b) 0.0.0.0 ?
- (10%) 7. Please describe the operation model of Virtual Private Network (VPN).
- (20%) 8. Basically, routing protocols can be classified into two categories: Distance-vector approach and Link-state approach. Please describe and compare the features of these approaches. Routing Information Protocol (RIP), Open Shortest Path First (OSPF), and Border Gateway Protocol (BGP) belong to which approach ?