

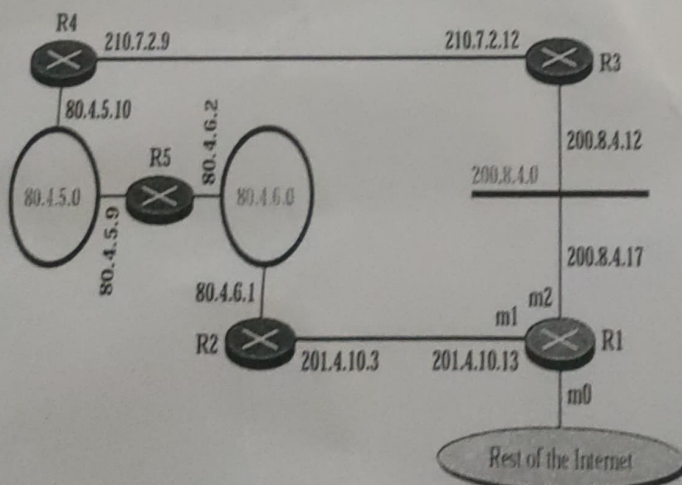


- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

 Answer ALL Questions

(10 x 10 = 100 Marks)

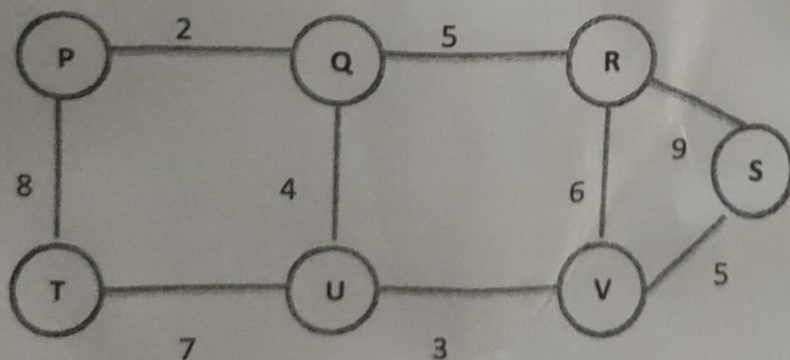
1. How do the layers of TCP/IP protocol model correlate to the layers of OSI model? Explain the need for Layered Architecture in Data Communication using suitable examples.
2.
 - i. Describe the fields in IEEE 802.3 MAC frame and show the minimum and maximum payload lengths. [5]
 - ii. Discuss the architecture and protocol stack of Bluetooth technology. [5]
3.
 - a) Selective Repeat ARQ bidirectional protocol is used between sender(A) and receiver(B), assume the sender's window size is eight. Draw the flow diagram and write the contents of the sender's and receiver's sliding windows (Sf, Sn) at each time instant for the following scenario. [8]
 - i. Initial Position. Before A and B sends any frames
 - ii. A transmits three frames and B transmits two frames.
 - iii. A transmits next two frames with Ack for first frame received.
 - iv. B transmits next two frames with Ack received for 2 frames.
 - v. B receives corrupted frame and send NAK.
 - vi. A receives all frames from B and sends Ack but Ack is lost.
 - b) Piggybacking improves the efficiency of the bidirectional protocol for ARQ. Justify the above statement. [2]
4. Construct the routing table for R1, R3 and R5 for the given network (classful address)



5. With a neat sketch explain the various fields in TCP segment header format. Emphasize on connection establishment, data transfer and connection termination using three-way handshaking with a Scenario. [6]
6. Elaborate on the elements of Domain Name System, illustrate how name-address resolution can be performed in DNS.
7. a) Suppose if you are a network engineer recommend design goals and techniques for implementing firewall to control access and enforce security policies. [6]
b) Classify various types of firewalls with their Pros and Cons. [4]
8. Describe the working of Data Encryption Standard (DES) algorithm with necessary diagram. Analyze the drawbacks of DES and determine solutions to overcome it.
9. a) A bit stream 1010001101 is transmitted using the standard CRC method. The generator is 110101. Show the generation of code word and the actual bit stream transmitted, if the second bit from the left is inverted during transmission. How would this error be detected at the receiver's end?

OR

9. b) i. Summarize the three persistence protocols that can be used with CSMA. [8]
Draw the flow diagram for CSMA/CD.
ii. A network using CSMA/CD has a bandwidth of 20 Mbps. If the maximum propagation time is $25.6 \mu s$, what is the minimum size of the frame? [2]
10. a) List the actions to be performed in Link State Routing. Apply Dijkstra's algorithm for the given graph to form the shortest path tree and construct the routing table for Node S which is the root node.



OR

10. b) Consider the IPv4 datagram header with total length of 12000 bytes received with the following information. Interpret and represent every field separately. Suppose if the datagram travels through Token Ring (4Mbps) whether fragmentation is needed or not. If fragmentation is needed diagrammatically represent it with all fields.

4	12	0001000	12000	
8500			000	0
8	6	0		
11.23.36.8				
200.11.4.7				

⇔⇔⇔ Y/D/TY ⇔⇔⇔