Review Sheet 4

Discussion questions

1. Sketch a diagram that illustrates router architecture.
2. Sketch a diagram that shows input port architecture.
3. Sketch a diagram that show different switch fabric architecture
4. What is an IP address? What does it consist of? What is a subnet? Give an example and illustrate your answer by a schematic diagram
5. If RTT = 200 ms and the link capacity is 10Gbps. What would be the size of router buffer?
6. What is CIDR? Illustrate your answer by an example.
7. What is DHCP? Illustrate your answer by a schematic diagram.
8. What is NAT? Illustrate your answer by a schematic diagram.
9. Why do we use tunneling in computer networks? Sketch an example.
10. What is an autonomous system (AS)? Why do we use it? Support your answer using a schematic diagram.
11. Compare between LS and DV routing algorithms.
12. Sketch a diagram that shows hierarchical OSPF.
13. Compare between unicast, multicast, and broadcast.
14. What are different methods for broadcasting?
15. Why is source duplicate inefficient in broadcasting?
16. What are the issues associated with in-network duplicate? Give three solutions for these issues.
17. What type of sessions does BGP use?
18. What are the different methods for multicasting? Illustrate your answer by schematic diagrams.
19. How can we overcome the addressing problem in multicasting? Illustrate your answer by a schematic diagram.
20. Explain using schematic diagrams each of the following multicast routing protocols:
    i) source-based shortest path tree ii) center-based shared tree

Put *T* in front of the true statement and *F* in front of the false statement in each of the following:

1. Two Key Network-Layer Functions are forwarding and routing
2. IP is a best effort protocol
3. Datagram network provides network-layer connection service
4. In IPv6 datagram, the IP address field is 32-bit long
5. IPv6 uses fragmentation when the datagram size exceeds MTU
6. IPv4 datagram has a header of 20-bit long
7. Tunneling is used to achieve IPv4/IPv6 compatibility

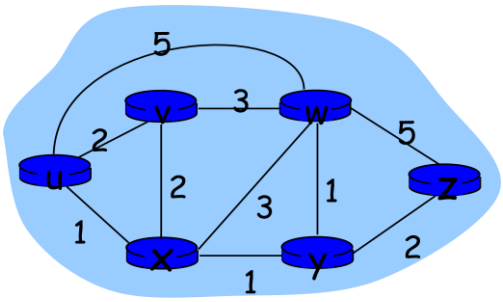
Fill in the space in the following sentences:

8. …… means move packets from router's input link interface to appropriate router output link interface
9. …… means determine route taken by packets from source to dest.
10. The network layer relies on …….. to provide services
11. …… update forwarding tables of the routers

12. …… maps the dest. address of the packet to the appropriate output link interface of the router
13. ……. is used to convert local IP addresses of a subnet into one IP address
14. …… is used to dynamically create IP addresses for the hosts in the internet

Problems

15. Show the steps of LS routing algorithm on the following network diagram assuming u is the source. Draw the shortest path diagram and the forwarding table of source u.



16. Show the steps of DV algorithm on the following network diagram.