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10CS/IS64

# Sixth Semester B.E. Degree Examination, July/August 2022
## Computer Networks – II

Time: 3 hrs. Max. Marks:100

**Note:** ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***



### PART – A

1 a. Differentiate between connection oriented and connectionless network services. **(04 Marks)**

b. Consider the directed network shown in Fig.Q1(b) with associated link costs, apply Bellman-Ford algorithm to find the shortest path from node C to node A.

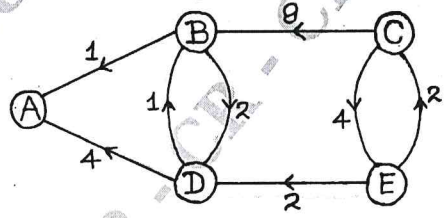


Fig.Q1(b) **(10 Marks)**

c. Explain the concept of Hierarchical Routing with the help of the example. How is it different from flat routing scheme? **(06 Marks)**

2 a. Explain the behavior of leaky bucket algorithm with flow chart. **(06 Marks)**

b. Explain weighted fair queuing at the packet level. Show the transmission sequences for fluid-flow and packet by packet system by considering the two logical buffers (buffer1, buffer2). Assume each has a single L-bit packet to transmit at t = 0 and no subsequent packet arrive, and capacity C = L bits/second = 1 packet/second. **(08 Marks)**

c. A computer on a 6 Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps? **(06 Marks)**

3 a. Suppose we need a communication service to transmit real-time voice over the internet. What features of TCP and what features of UDP are appropriate? **(04 Marks)**

b. Explain the subnet mask. Specify the class of address and the subnet ID for the following cases:
i) A packet with IP address 127.156.28.31 using mask pattern 255.255.255.0
ii) A packet with IP address 150.156.23.14 using mask pattern 255.255.255.128 **(10 Marks)**

c. Consider an estimated population of 620 million people. What is the maximum number of IP address that can be assigned per person using IPv4 and IPv6? **(06 Marks)**

4 a. Explain the three way handshake for establishing a TCP connection. **(08 Marks)**

b. Explain why RED (Random Early Detection) helps prevent TCP senders from detecting congestion and slowing down their Transmission rates at the same time. **(06 Marks)**

c. What do you mean by mobile IP? Explain mobile IP routing operation. **(06 Marks)**

## PART – B

5 a. Compare two approaches, obtaining a name from a file in a remote machine and from a DNS server of the local ISP. **(06 Marks)**

b. Using the RSA public key cryptosystem, with a = 1, b = 2 etc.
(i) If p = 7 and q = 11, List five legal values for d
(ii) If p = 13 and q = 31 and d = 7, Find e.
(iii) Using p = 5, q = 11 and d = 27, Find e and encrypt "abcdefghij". **(08 Marks)**

c. What are the elements of network management? Discuss the interaction between SNMP management station and SNMP agent. **(06 Marks)**

6 a. With a neat diagram, explain the differentiated services QoS. **(08 Marks)**

b. Explain need for overlay networks and P2P connection. **(08 Marks)**

c. Write a note on Virtual Private Networks. **(04 Marks)**



7 a. Write a note on VoIP signaling protocols. **(06 Marks)**

b. The sampling rate of a certain CD player is 80,000 and samples are quantized using a 16 bits/sample quantizer. Determine the resulting number of bits for a piece of music with a duration of 60 minutes. **(07 Marks)**

c. What do you mean by Stream Control Transmission Protocol (SCTP) and also explain SCTP packet structure. **(07 Marks)**

8 a. Briefly explain the classification routing protocols in wireless Ad-hoc networks. **(08 Marks)**

b. Write short notes on ZigBee technology. **(05 Marks)**

c. Explain the structure of a typical sensor node. **(07 Marks)**

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