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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.

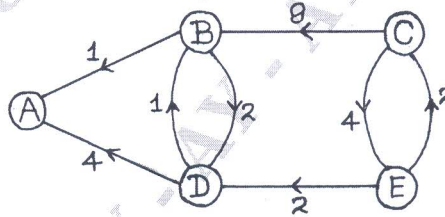


Fig.Q1(b)

(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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**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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