6E3201

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B. Tech. VI Sem. (Main & Back) Exam., May/June-2014
Computer Engineering
6CS1 Computer Networks
Common to CS & IT

Time: 3 Hours   Maximum Marks: 80
                                                 Min. Passing Marks: 24

Instructions to Candidates:-

*Attempt any **five questions**, selecting **one question** from **each unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.* rtuonline.com

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1._____   2._____

UNIT-I

Q.1 (a) Explain optimality principle. How the principle is utilized in designing routing algorithms? [2]

(b) How connection oriented and connection less services are implemented in network layer? Discuss. [4]

(c) When flooding is used for routing, the first pocket arriving at the destination will reach through the optimal path. Justify the statement. [4]

(d) What measures are taken to control population and life of link state packets in link state routing algorithm? Explain. [6]

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OR

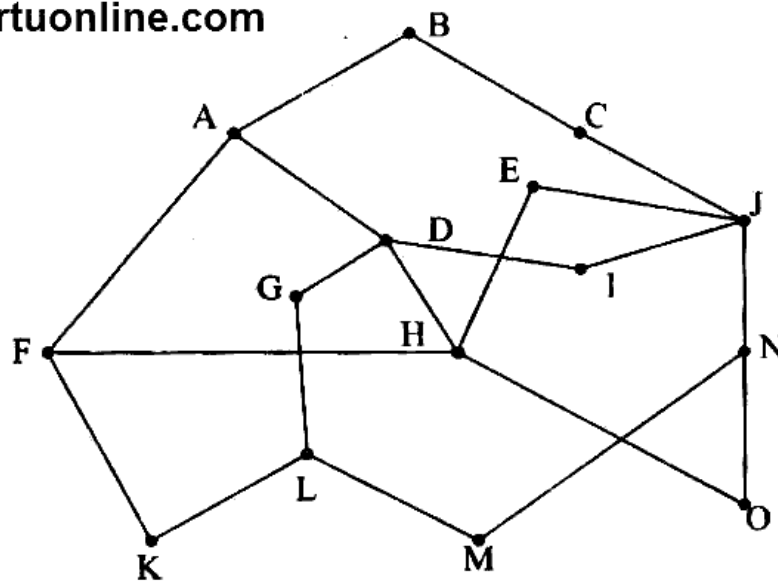Q.1 (a) For the fig. (i) construct a sink tree rooted at B [6]

Fig. (1)

(b) For the sink tree computed in part (a), compute the number of packets generated by a broadcast from B using reverse path forwarding. [10]

UNIT- II

Q.2 (a) In Internet Protocol (IP), how fragmentation is implemented? Explain the fragmentation and fields used in re-assembly at the destination. [10]

(b) What is subnetting? Why it is used? Explain the process of routing packets in a network with subnets. [6]

OR

Q.2 A router has the following CIDR entries in its routing table.

Address/mask	next hop	
135.46.56.0/22	Interface	0
135.46.60.0/22	Interface	1
192.53.40.0/23	Router	1
Default	Router	2

For each of the following IP addresses, what does the router do if a packet with that address arrives?

(i) 135.46.63.10

(ii) 135.46.57.14

(iii) 135.46.52.2

(iv) 192.53.40.7

(v) 192.53.56.7

Show all calculations   [16]

UNIT-III

Q.3 (a) Show that 3-way handshake protocol used for connection establishment works in the presence / occurrence of (i) duplicates and (ii) loss acknowledgements.   [8]

(b) RTP is used to transmit CD Quality audio, which makes a pair of 16-bit samples 44,100 times/ sec, one sample for each of stereo channel. How many packets per second must RTP transmit?   [8]

OR

Q.3 (a) A TCP is sending full windows of 65535 bytes over a 1-Gbps channel that has 10 msec. one way delay. What is the maximum throughput achievable? What is the line efficiency?   [8]

(b) Explain differences in using sliding window protocol at transport layer and at data link layer.   [4]

(c) A client sends a 128- byte request to a server located 1000m away over a 1-Gbps optical link. What is the efficiency of the line during RPC?   [4]

UNIT-IV

Q.4 (a) Explain the significance of following control bits in TCP: [8]

    (i) SYN

    (ii) ACK

    (iii) RST

    (iv) FIN

(b) If the TCP round trip time (RTT), is currently set 30 msec. and the following acknowledgements come in after 26, 32, and 24 msec. respectively, what is the RTT estimate using Jacobson algorithm? Assume suitable value for α (alpha).

[8]

OR

Q.4 (a) Suppose that the TCP congestion window is set to 18 KB and timeout occurs. How big will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB. [8]

(b) What is "slow start"? How does it help in dealing with congestion? Explain. [8]

UNIT-V

Q.5 (a) In DNS, can a single host have (i) multiple hostnames and (ii) multiple addresses? How the records are organized in such cases? [8]

(b) Differentiate between (i) iterative and (ii) recursive DNS query. Explain both.

[8]

OR

Q.5 (a) What is the role of cookies in World Wide Web? [8]

(b) Write short notes on the following: [8]

    (i) Performance enhancement in WWW.

    (ii) P2P file sharing.