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**Question Paper Code: 52143**

M.E. DEGREE EXAMINATION, DECEMBER 2015

First Semester

Computer Science and Engineering (With Specialization in Networks)

15PNE103 - HIGH PERFORMANCE COMPUTER NETWORKS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 3 = 15 Marks)

1. List the various service categories defined by the ATM Forum.
2. What is meant by choke packets?
3. What kind of flow control mechanism is used in TCP?
4. State the characteristics of elastic traffic.
5. Draw the format of MPLS label.

PART - B (5 x 14 = 70 Marks)

6. (a) (i) Explain ATM protocol architecture with a neat block diagram. (8)  
(ii) Discuss the relevance of CSMA/CD in Gigabit Ethernet. (6)

Or

- (b) Explain IEEE 802.11 architecture in detail. Illustrate the functions and combined operation of various protocols in MAC sub layer. (14)

7. (a) Describe the queuing analysis and the various queuing models in the network traffic management system. (14)

Or

(b) (i) Briefly explain about the effects of congestion. (7)

(ii) How congestion avoidance is done in a frame relay network? Explain. (7)

8. (a) (i) Discuss on KARN'S algorithm. (7)

(ii) Describe the ABR capacity allocation in briefly. (7)

Or

(b) Discuss in detail the ways in which TCP deals with the calculation of retransmission timers. (14)

9. (a) Explain in detail about Random Early Detection algorithm. (14)

Or

(b) (i) List and explain the various categories of Integrated service architecture. (7)

(ii) What is GPS? Explain the triple-differences solution algorithm. (7)

10. (a) Explain the design goals and characteristics of the Resource reservation protocol in detail. (14)

Or

(b) Discuss about RTP protocol architecture and draw its header format. (14)

PART - C (1 x 15 = 15 Marks)

11. (a) Consider a packet-switching network of N nodes, connected by the following topologies:

Star: One central node has no attached station; all other nodes attach to the central node.

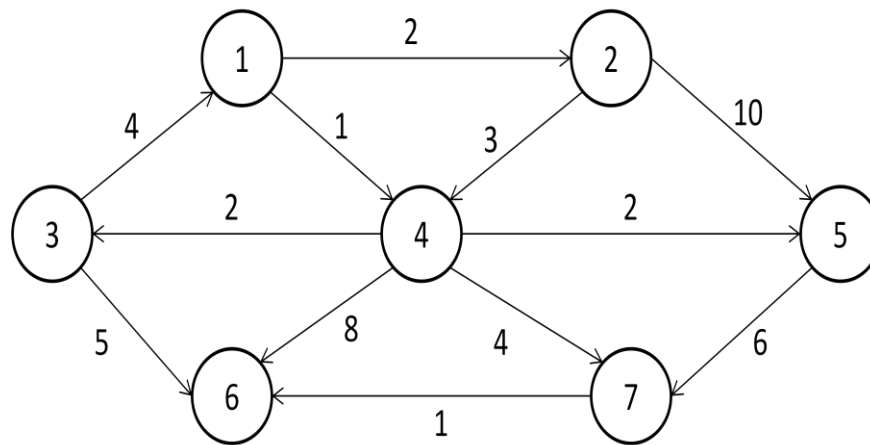
Loop: Each node connects to two other nodes to form a closed loop.

Fully connected: Each node is directly connected to all other nodes.

For each case, give the average number of hops between stations. (15)

Or

- (b) For the given network, use Dijkstra's algorithm to complete the shortest path from 1 to all other nodes. Make sure to show the results of the computation at each step. (15)



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