Total No. of Questions : 12]

SEAT No. :

P1452

[Total No. of Pages : 3

[4759]-209

B.E. (Computer Engineering)

b: DESIGN AND ANALYSIS OF COMPUTER NETWORKS

(2008 Course) (Semester - I) (Elective - I) (410444)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn whenever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) What is arrival statistics and service statistics in M/M/1 system. Explain Markov chain formulation. **[9]**

b) Message arrive independently to a system at the rate of 10 pm. Their length is exponentially distributed with an average of 3600 characters. They are transmitted on a 9600 bps channel. A character is 8 bit long.**[9]**

i) What is average service time, arrival rate, service rate?

ii) What are the average number of message in queues & number of message in queue?

OR

Q2) a) In a small convenience store there's room for only 4 customers. The owner himself deals with all the customers - he likes chatting a bit. On average it takes a customer 4 minutes to pay for his/her purchase. Customers arrive at an average of 1 per 5 minutes. If a customer finds the shop full, he/she will go away immediately. **[9]**

i) What fraction of time will the owner be in the shop on his own?

ii) What is the mean number of customers in the store?

iii) What fraction of customers is turned away per hour?

iv) What is the average time a customer has to spend for check-out?

b) Describe exponential random variable and memory less property of random variable. **[9]**

P.T.O.

Q3) a) Explain physical and logical designing issues of Network Backbone? **[8]**

b) Explain hierarchical and collapsible network architecture? **[8]**

OR

Q4) a) List and explain common resources used in system design with their metrics. **[8]**

b) Explain various optimization techniques like multiplexing parallelism, virtualization, soft state etc. used in system design? **[8]**

Q5) a) A computer on 6 Mbps network is regulated by token bucket. The bucket is filled at the rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the fill 6 Mbps? **[8]**

b) Explain the rate controlled scheduling for generated service connection? **[8]**

OR

Q6) a) Explain in details ATM forum end-to-end rate controlled scheme and credit based schemes of closed loop flow control. **[8]**

b) Explain WFQ? What is the advantage of worst case fair weighted fair queuing (WF^2Q) over WFQ? **[8]**

SECTION - II

Q7) a) Explain different traffic model in details? **[9]**

b) Explain leaky-bucket regulator with help of diagram. **[9]**

OR

Q8) a) Explain, what are the different time scale and mechanism used at these time scale for traffic management? **[9]**

b) What is peak-load pricing. Explain if peak-rate allocation is reasonable for data traffic? **[9]**

Q9) a) Explain router architecture with suitable diagram. **[8]**

b) Explain expanded tries scheme in details. **[8]**

OR

Q10)a) Divide a network 192. 168.4.0/24 into two sub networks having host size of 50. Find subnetwork address, subnet mask and IP address range for the sub network? **[8]**

b) Explain OSPF Routing algorithm. **[8]**

Q11)a) Discuss security issues at transport layer with suitable example and possible solutions? **[8]**

b) What are the functions of network Layer? Explain? **[8]**

OR

Q12)a) Explain bandwidth management. **[8]**

b) Explain which points are considered while planning and implementing network. **[8]**

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