Total No. of Questions : 12]

SEAT No. :

P1803

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B.E. (Computer Engineering)

b - DESIGN AND ANALYSIS OF COMPUTER NETWORKS

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

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

Instructions to the candidates:

1) ***Answer any 3 questions from each section.***
2) ***Answer to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicates 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 arrives 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) Telephone company establishes a direct connection between two cities expecting Poisson traffic with rate 30 calls/min. The durations of calls are independent and exponentially distributed with mean 3 min.The inter arrival times are independent of call durations. How many circuits should the company provide to ensure that an attempted call is blocked (because all circuits are busy) with probability less than 0.01? It Is assumed that blocked calls are lost(i.e., blocked calls are not attempted again). **[9]**

b) Describe exponential random variable and memoryless 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) What is switch fabrics? Why a third generation switch fabrics does provides more bandwidth than second generation switch? **[8]**

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

Q5) a) A computer on 6 Mbps network is regulated by token bucket. The bucket is filled at the rate of 1Mbps. 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 leaky -bucket regulator with help of diagram? **[8]**

b) What is QOS? Explain different approaches to improve QOS? **[8]**

OR

Q8) a) Explain, what are the different time scale and mechanism used at these time scale for traffic management? **[8]**

b) What is peak-load pricing? Explain if peak-rate allocation is reasonable for data traffic? **[8]**

Q9) a) Explain expanded tries scheme in details? **[8]**

b) What is IP trace back? What is IP trace back evaluation schemes? Explain its implication and challenges? **[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 Router architecture with suitable diagram. **[8]**

Q11)a) Discuss security issues at network layer with suitable example and possible solutions? **[9]**

b) What are the functions of network Layer? Explain? **[9]**

OR

Q12)a) Explain Bandwidth Management? **[9]**

b) Explain which points are considered while planning and implementing network? **[9]**

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