

Total No. of Questions : 12]

SEAT No. :

**P3431**

**[4959]-206**

[Total No. of Pages : 3

**B.E.(Computer Engineering)**

**b:DESIGN AND ANALYSIS OF COMPUTER NETWORKS**

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

*Time :3Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

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

**SECTION-I**

**Q1) a)** Why distribution is required in network design? Explain exponential and geometric distribution? **[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 the utilization of server?

ii) What is the probability that there are two messages are in the system?

iii) What is the average message in the system?

OR

**Q2) a)** Consider a disk drive that can complete an average request in 10 ms. The time to complete a request is exponentially distributed. Over a period of 30 minute, 117000 requests were made to the disk. How long did it take to complete the average request? What is the average number of queued request? **[9]**

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

**Q3) a)** Explain the steps for performance analysis and tuning. How performance of a system is tuned? **[8]**

***P.T.O.***

- 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) 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 6Mbps? [8]

- b) Explain the rate controlled scheduling for generated service conneciton? [8]

**OR**

**Q6)** a) Explain how TCP support flow control? Differentiate between open loop and close loop flow control technique? [8]

- b) Explain WFQ? What is the advantage of worst case fair weighted fair queuing(WF<sup>2</sup>Q) over WFQ? [8]

## **SECTION-II**

**Q7)** a) Explain different traffic model in details? [8]

- b) What is QOS? Explain different queue manaement algorithms? [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 signaling mechanism? Explain IETF signaling. [8]

**Q9)** a) Explain what is routing using masks with suitable examples? [8]

- b) What is subnetting and super-netting? Explain with suitable example?[8]

**OR**

- Q10)** a) Explain how fragmentation is handled in IPV4 and IPV6?. [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 roles and responsibilities of network administrator? [9]

OR

- Q12)** Write short note on [18]  
a) Bandwidth management tools.  
b) CIDR  
c) Next generation network

