Total No. of Questions :8]

SEAT No. :

P4454

[Total No. of Pages :3

[5255] - 121

M.E. (Computer) (Computer Networking)

NETWORK DESIGN, MODELING AND ANALYSIS

(2008 Pattern) (Semester - II)

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 wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain in detail Binomial distribution with its suitable application? **[7]**

b) Messages arrive independently to a system at the rate of 12 messages per minute. The lengths of messages are exponentially distributed with an average 4800 characters. The channel used for transmission has rate of 9600 bps, character is represented by ASCII format. Find, **[8]**

i) Average service time.

ii) Arrival rate.

iii) Service rate.

iv) Utilization of server.

v) Average number of messages.

c) Explain traffic requirement with respect to design of computer network.**[3]**

P.T.O.

Q2) a) Explain in detail Gaussian Probability function with its suitable application. **[6]**

b) There are 150 terminals feeding a network node. Each terminal sends one transaction every 3 minutes, while the node can only process 60 transactions per minute. What is the probability that there are no more than 60 transactions per minute. What is the probability that there are no more than 60 transactions arrival per minute? **[6]**

c) Explain relation between CDF and pdf with suitable diagram. **[4]**

Q3) a) Explain & Analyze in detail queuing system with infinite servers? Give its Applications. **[8]**

b) What is terminal concentrator? Explain in detail features of terminal concentrator in computer network? **[8]**

Q4) Write short notes on (any three): **[16]**

a) Little's Theorem.

b) Priority Queuing.

c) Random variables.

d) Network design tools.

SECTION - II

Q5) a) Describe in detail network analysis. Explain the importance of network analysis process. **[6]**

b) Explain subnetworking in brief.
Given a Host A with IP address 192.168.2.10 and Host B with IP address 192.168.4.10. What subnet mask one should use to bring these two hosts on same network and on two different networks. Justify. **[10]**

Q6) a) Explain following performance characteristics of network and /or network components. **[4]**

i) Capacity.

ii) Delay.

iii) Reliability, maintainability and availability.

b) Solve following terminal assignment problem using augmentation path algorithm. Weight of each node is 01

Maximum capacity of concentrator is 02 **[12]**

		Concentrator		
		G	H	I
Terminal	a	6	3	8
	b	2	9	4
	c	3	1	4
	d	2	5	9
	e	1	6	3
	f	2	7	9

Q7) a) Explain duties and responsibilities of network Administrator. **[8]**

b) Internet connectivity of 8 mbps is to be distributed to 6 different networks. What parameters will you consider and suggest a way to distribute. **[8]**

Q8) Write short notes (any three) : **[18]**

a) Subnetting.

b) Sharma's Algorithm.

c) CMST.

d) Role of Network Administrator.

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