8E4088

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B. Tech. (Sem. VIII) (Main/Black) Examination, April/May - 2011
Electronics & Comm.
8EC1 Computer Networks

Time : **3** Hours] [Total Marks : **80**
[Min. Passing Marks : **24**

*Attempt any **five questions**, selecting **one question** from **each unit**. **All** questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly, Units of quantities used/calculated must be stated clearly.*

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. Nil 2. Nil

UNIT – I

1 (a) Consider an M/M/1 queue with two types of customers. The mean service of all customers is 5 minutes. The arrival tare of type1 customer is 4 customers per hour and for type2 customers it is 5 customers per hour. Type1 customers are treated with priority over type2 customers.

(i) Determine the mean sojourn time of type1 and 2 customers under the preemptive-resume priority rule.

(ii) Determine the mean sojourn time of type1 and customers under the non-preemptive priority rule.

8

(b) Consider an M/G/1 queue where the server successfully completes a service time with probability P. If a service time is not completed successfully, it has to repeated until it is successful. Determine the mean sojourn time of a customer in the following two cases :

(i) The repeated service times are identical.

(ii) The repeated service times are independent, thus (possibly) different.

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OR

1 (a) What is the queueing model ? How you characterize queueing model ?

4

(b) Explain Kendall notation of queueing models.

3

(c) Explain Little's law with an example.

3

(d) A repair man fixes broken televisions. The repair time is exponentially distributed with a mean of 30 minutes. Broken televisions arrive at his repair shop according to a Poisson stream, on average 10 broken televisions per day (8 hours)

(i) What is the fraction of time that the repair man has no work to do ?

(ii) How many televisions are on average, at his repair shop?

(iii) What is the mean throughput time of a television ?

6

UNIT – II

2 (a) Explain stop and wait protocol with the help of a suitable diagram.

6

(b) Explain in detail, the OSI reference model. How is it different from TCP/IP model ? Also list functionality of data link layer.

10

OR

2 (a) What are disadvantages of circuit switching ? Compare it with packet and message switching in detail. Also, write, which of these switching you prefer for telephone networks and why?

8

(b) Explain the operation of a selective repeat protocol with the help of a diagram.

5

(c) Draw the diagram for header format of the user-network interface of ATM network.

3

UNIT – III

3 (a) Explain the token passing technologies used in FDDI. How are new tokens generated on an FDDI network ? What advantages does this method have when adding and deleting stations to/from the network of when error occurs ?

10

(b) How does CSMA/CD work ? Explain in detail the frame format of CSMA/CD.

6

OR

3 (a) What happens in a token bus if a station accepts the token and then crashes immediately.

4

(b) A network using CSMA/CD has a bandwidth of 10 Mbps. If the maximum propagation time is 25.6 μs, what is the minimum size of the frame ?

4

(c) Explain Bridges, Hubs, Routers and Gateways briefly.

8

UNIT – IV

4 (a) Differentiate between the following :

(i) Distance vector routing and Link state routing.

(ii) Congestion control and Flow control.

(iii) TCP and UDP.

3×3=9

(b) How OSPF is implemented in if network ? Illustrate.

7

OR

4 (a) Draw the TCP/IP network architecture ? What are the functionalities of network layer in internet.

8

(b) Write any three situations where congestion can occu in network. What are the different techniques, which network designer can use for congestion avoidance ? If congestion occures, how is it dealt ?

8

UNIT – V

5 (a) Explain the ATM layered architecture.

6

(b) Write short notes on :
(i) Frame relay
(ii) ISDN system architecture.

10

OR

5 (a) Explain the various congestion control algorithms used in ATM networks.

8

(b) Write short notes on any **two** :
(i) X.25
(ii) Broadband ISDN
(iii) Recognition algorithm in ATM networks.

8
