

UNIVERSITY OF PUNE

[4364-765]

B.E. (Computer Engineering) Examination-2013

Design and Analysis of Computer Networks

(2008 pattern)

Time-Three hours

Maximum Marks-100

[Total No. of Question=12]

[Total no. of printed pages= 4]

Instructions:

- (1) Answer 3 questions from Section-I. Answer question 3 from Section-II,
- (2) Answers to the two sections should be written in separate answer books.
- (3) Neat diagrams must be drawn whenever necessary.
- (4) Use of electronic pocket calculator is allowed.
- (5) Assume suitable data wherever necessary.

SECTION-I

Q.1 (a) Explain the characteristics of queuing system and the six parameters associated with Kendall Notations. (8)

(b) Measurement of a network gateway: (10)

mean arrival rate : 125 Packets/s

mean response time: 2 ms

Assuming exponential arrivals;

1. What is the gateway's utilization?

2. What is the probability of n packets in the gateway?

3. Mean number of buffers so P (overflow) is $< 10^{-6}$?

OR

- Q.2 (a) Explain significance and applications of Little's theorem in queuing theory. (8)
- (b) Explain in short M/M/1 Queuing Model. A drive-in banking service is modeled as an M/M/1 queuing system with customer arrival rate of 2 per minute. It is desired to have fewer than 5 customers line up 99 percent of the time. How fast should the service rate be? (10)
- Q.3 (a) Describe any four System Design techniques specifying their associated advantages. (8)
- (b) What is Space-division switching? Draw multistate crossbar switch architecture and define the formula for number of cross points. (8)

OR

- Q.4 (a) Explain Hierarchical and Collapsible Backbone Network Architecture. (8)
- (b) Differentiate between second generation and third generation switch. Justify why does third generation switch provide more bandwidth than second generation switch. (8)
- Q.5 (a) Explain Weighted Round Robin scheduling techniques. Connections A, B and C have mean packet sizes of 50,000 and 1500 bytes and weights 0.5, 0.75 and 1.0. How many packets from each connection should a round robin server in each round? (8)
- (b) Differentiate between open loop and closed loop flow control techniques. Explain how TCP supports flow control. (8)

OR

- Q.6 (a) Describe the functioning of Deficit Round Robin scheduling discipline with suitable example. (8)

(b) Explain Weighted Fair Queuing (WFQ). What is the advantage of Worst case Fair weighted Fair Queuing (WF^2Q) over Weighted Fair Queuing? (8)

SECTION-II

Q.7 (a) Describe the significance of Traffic subclasses in traffic engineering. Explain any two Traffic classes related to ATM networks. (8)

(b) Explain the Quality-of-service (QoS) parameters used in ATM Forum and IETF approaches. (8)

OR

Q.8 (a) What is Traffic management? Explain Telephone and Internet traffic models in short. (8)

(b) What is signaling? Which are the types of Signaling? Explain Signaling System No.7 in telephone networks. (8)

Q.9 (a) Explain different types of routers with neat diagram. (8)

(b) Explain how router performance is calculated. Derive expression for router throughput in terms of packet size and packet per second. (8)

OR

Q.10 (a) Explain the architecture of router along with the fields in the routing table. (8)

(b) Explain with diagram components of Router along with their functionalities. (8)

Q.11 (a) An organization uses a class C network decided to sub net into four different subnets the appropriate sub net mask for the same. How many hosts will be supported in each subnet? (6)

(b) Explain any five network management related tools/commands used by the Network Administrator. (6)

(c) Describe any two tools used for Network traffic management. (6)

OR

Q.12 Write a short note on.

(18)

(a)CIDR

(b)Bandwidth Management

(c)Securing Enterprise Network using firewall

www.puneqp.com