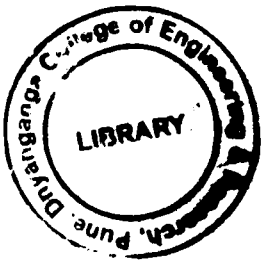
May - June - 2011
TE - COMP
Sem - II

[3963] – 357

T.E. (Computer Engineering) (Semester – II) Examination, 2011
COMPUTER NETWORKS (New)
(2008 Pattern)

Time: 3 Hours | Max. Marks: 100

Instructions : *1) Answers to the **two** Sections should be written in **separate** books.*



*2) **Neat** diagrams must be drawn **wherever** necessary.*

*3) Figures to the **right** indicate **full** marks.*

*4) **Use** of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam table is **allowed**.*

*5) Assume suitable data, **if necessary**.*

SECTION – I

1. a) Explain difference between message switching and packet switching with suitable examples. **8**

   b) Explain three fundamental models that help to reveal key problems for the designers of distributed systems. **6**

   c) What are reasons for using layered protocol ? **4**

   OR

2. a) What is the principle difference between connection oriented and connectionless communication ? **8**

   b) Explain advantages and disadvantages of having international standards for network protocols. **6**

   c) Why does ATM use samll, fixed-length cells ? **4**

3. a) A channel has a bit rate of 4 kbps and a propagations delay of 20 m. sec. For what range of frame sizes does stop and wait give an efficiency of at least 50 percent ? **8**

   b) Imagine a sliding window protocol using so many bits for sequence numbers that wraparound never occures. What relations must hold among the four window edges and the window size ? **8**

   OR

P.T.O.

4. a) Enlist and explain data link layer design issues. **8**

   b) What is the minimum overhead in sending an IP packet using PPP ? Count only the overhead introduced by PPP it self, not the IP header overhead. **8**

5. a) In an infinite-population slotted ALOHA system, the mean number of slots a station waits between a collision and its retransmission is 4. Plot the delay versus throughput curve for the system. **8**

   b) Explain different approaches for receiver to unambiguously determine the start, end, or middle of each bit without reference to an external clock. **8**

OR

6. a) Measurements of a slotted ALOHA channel with an infinite number of users show that 10 percent of the slots are idle. **8**
   a) Wht is the channel load, G ?
   b) What is the throughput ?
   c) Is the channel underloaded or overloaded ?

   b) In a token ring the sender removes the frame. What modifications to the system would be needed to have the receiver remove the frame instead and what would the consequences be ? **8**

SECTION – II

7. a) For hierarchical routing with 4800 routers, what region and cluster sizes should be chosen to minimize the size of the routing table for a three-layer hierarchy ? **8**

   b) Describe a way to do reassembly of IP fragments at the destination. **6**

   c) Give examples of protocol parameters that might be negotiated when a connection is set up ? **4**

OR

8. a) Explain with suitable examples, how do IP addresses get mapped onto data link layer address ? **8**

   b) When the IPv6 protocol is introduced, does the ARP protocol have to be changed ? Explain the changes in brief and its nature. **6**

   c) Is fragmentation needed in concatenated virtual circuit internets, or only in datagram systems ? **4**

9. a) What is the task of transport layer ? Explain the services provided to the upper layers by the transport layer. **8**

   b) Describe the procedure of a server accepting connections through a socket. What are the various ways a server handles a connection request ? Why the use of same local protocol port number by multiple processes causses no confusion in the concurrent approach ? **8**

OR

10. a) Suppose a router receives an IP packet containing 600 data bytes and has to forward the packet to a network with maximum transmission unit of 200 bytes. Assume that IP header is 20 bytes long. Show the fragments that the router creates and specify the relevant values in each fragment header. **8**

    b) Define threshold condition in congestion. How does TCP tackle congestion problem using the internet congestion control algorithm ? **8**

11. a) When web pages are sent out, they are prefixed by MIME headers, Why ? **7**

    b) Explain FTP protocol. Can SMTP be used to retrieve mail from mail server to the client. **6**

    c) What is the difference between end to end delay and packet Jitter ? **3**

OR

12. a) What is domain name system ? Explain how a resolver looks up a remote name with suitable example. **7**

    b) How do you make an image clickable in HTML ? Give an example. **6**

    c) Compare FTP and TFTP. **3**
