Code No: R05310504 **Set No. 1**

III B.Tech I Semester Supplimentary Examinations, February 2008
COMPUTER NETWORKS
(Common to Computer Science & Engineering and Information Technology)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Give a detailed description of the Novell Netware IPX packet?
   (b) Compare connection less and connection oriented services with suitable examples? [8+8]
2. (a) Television channels are 6MHz wide. How many bits/sec can be sent if four level digital signals are used? Assume a noiseless channel
   (b) How does a virtual circuit differ from a physical circuit? What advantages would a virtual circuit provide? [8+8]
3. (a) Discuss the basic functions of data link layer in brief?
   (b) What is pipelining? Discuss the two approaches of dealing with errors in the presences of pipelining? [8+8]
4. What is a token? Discuss the protocol of token ring LAN in general. Discuss with example how priority is implemented in a token ring LAN? [16]
5. What are the services provided by Network layer to Transport layer. Explain. [16]
6. (a) What is Logical address and Physical address in computer networks? Why a mapping from logical address to physical address and vice versa is required? Explain the protocols which perform it.
   (b) Explain Special IP address. [10+6]
7. (a) What is the role played by threshold value in congestion control?
   (b) Assume network with links having abundant bandwidth. What are the pros and cons of using exponential increase and linear increase of congestion window? What happens if bandwidth is limited?
   (c) Explain how flow control is different from congestion control. [2+6+8]
8. (a) How POP works? What are the advantages of IMAP over POP?
   (b) What is the role played by message transfer agent? Explain. [6+10]

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Code No: R05310504 **Set No. 2**

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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Compare point -to-point channels with broadcast channels along with suitable examples?
   (b) A collection of five routers is to be collected in a point-to-point subnet. Between each pair of routers, the designers may put a high speed line, a medium-speed line, a low-speed line, or no line. If it takes 100ms of computer time to generate and inspect each topology, how long will it take to inspect all of them to find the one that best matches the expected load? [8+8]

2. (a) What is the need for wireless communication? Discuss about various portions of spectrum used for transmitting information?
   (b) What is done if the cells arriving at two or more input lines at a ATM switch want to go to the same output port in the same cycle? [8+8]

3. (a) Discuss the error control technique which is commonly used in data network. What value of N is used in go-back-N ARQ technique used in ARPANET and why?
   (b) Imagine that you are writing the data link software for a line used to send data to you, but not from you. The other end uses HDLC, with a 3-bit sequence number and a window size of seven frames. You would like to buffer as many out of sequence frames as possible to enhance efficiency, but you are not allowed to modify the software on the sending side. Is it possible to have a receiver window greater than one, and still guarantee that the protocol will never fail? If so, what is the largest window that can be safely used? [8+8]

4. What is a token? Discuss the protocol of token ring LAN in general. Discuss with example how priority is implemented in a token ring LAN? [16]

5. (a) The major problem with Distance vector algorithm is count to infinity. How exchange of complete path from router to Destination instead of delay, helps in solving count to infinity problem.
   (b) What are the advantages of adaptive routing approach over non adaptive routing. [10+6]

6. (a) How congestion is controlled in V.C. subnets?
   (b) What is Choke packet? How use of choke packets helps in congestion control? [8+8]

7. (a) Why Pseudo header is used in computing TCP Checksum?
   (b) Explain how TCP controls congestion? [6+10]
8. (a) How POP works? What are the advantages of IMAP over POP?
   (b) What is the role played by message transfer agent? Explain. [6+10]

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Code No: R05310504 **Set No. 3**

III B.Tech I Semester Supplimentary Examinations, February 2008
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What are the advantages of having layered architecture? Mention the layers of ISO-OSI reference model?
   (b) What is Internet? Mention some of the applications of Internet? [8+8]
2. (a) If a binary signal is sent over a 3KHz channel whose signal to noise ratio is 20dB. What is the maximum achievable data rate?
   (b) Which switching method allows real-time data transfer? Mention the advantages of packet switching? [8+8]
3. (a) What is the checksummed frame transmitted if the message is 1101011011 and the generator polynomial is $x^4 + x + 1$ using CRC.
   (b) Give the detailed description of HDLC frame format? [8+8]
4. (a) What is pure ALOHA and slotted ALOHA? Mention the advantages of slotted ALOHA?
   (b) A seven-story office building has 15 adjacent offices per floor. Each office contains a wall socket for a terminal in the front wall, so the sockets from a rectangular grid in the vertical plane, with a separation of 4 m between sockets, both horizontally and vertically. Assuming that it is feasible to run a straight cable between any pair of sockets, horizontally, vertically, or diagonally, how many meters of cable are needed to connect all sockets using
      i. a star configuration with a single router in middle?
      ii. an 802.3 LAN?
      iii. a ring network (without a wire center)? [6+10]
5. (a) Consider an organization which has several branches in different cities of India. How hierarchical routing can be used for routing in such an organization.
   (b) Explain how complexity of network layer and transport layer varies with type of service provided. [10+6]
6. Explain routing in mobile hosts. [16]
7. (a) What are the similarities and differences between Data Link layer and Transport layer?
   (b) Explain addressing at Transport layer? [6+10]

8. Explain how privacy is achieved in e-mail system? [16]

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Code No: R05310504 **Set No. 4**

III B.Tech I Semester Supplimentary Examinations, February 2008
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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) How would you utilize an existing telephone network for Computer-to-Computer data communications?
   (b) "Bad Timing" is also a problem for OSI reference model. Discuss. [8+8]
2. (a) Television channels are 6MHz wide. How many bits/sec can be sent if four level digital signals are used? Assume a noiseless channel
   (b) How does a virtual circuit differ from a physical circuit? What advantages would a virtual circuit provide? [8+8]
3. (a) Explain about the various services that the data link layer offers to the upper layers?
   (b) Compute the fraction of the bandwidth that is wasted on overhead (headers and retransmissions) for sliding window protocol using selective repeat on a heavily loaded 50-kbps satellite channel with data frames consisting of 40 headre and 3960 data bits. ACK frames never occur. NAK frames are 40 bits. The error rate for data frames is 1 percent, and the error rate for NAK frames is negligible. The sequence numbers are 8 bits. [8+8]
4. (a) What is the prime difference between a token bus and a token ring?
   (b) A large population of ALOHA users manages to generate 50 requests/sec, including both originals and retransmissions. Time is slotted in the units of 40 msec.
      i. What is the chance of success on the first attempt?
      ii. What is the probability of exactly k collisions and then a success?
      iii. What is the expected number of transmission attempts needed? [4+12]
5. (a) Network layer can provide either connection oriented service or connection less service. Which one you prefer. Justify your answer.
   (b) Define Virtual circuit and Datagram. Compare Virtual circuit subnet with Datagram Subnet.
   (c) Is Virtual circuit same as Physical connection. Comment. [5+8+3]
6. Explain routing in mobile hosts. [16]
7. (a) Why Pseudo header is used in computing TCP Checksum?
   (b) Explain how TCP controls congestion? [6+10]

8. (a) What is Domain? Explain the Internet domain space in the context of DNS.
   (b) What is resource record? What is its format?
   (c) What are the record types of DNS resource record? [6+5+5]

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