Code No: RR320503 **Set No. 1**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2007
COMPUTER NETWORKS
(Common to Computer Science & Engineering, Information Technology, Electronics & Control Engineering, Computer Science & Systems Engineering and Electronics & Computer Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Two networks each provide a reliable connection oriented service. One of them offers a reliable byte stream and other offers a reliable message stream. Are they identical? If so, why is distinction made? If not give an example of how they differ?
   (b) List two advantages and two disadvantages of having international standards for network, Protocols? [8+8]

2. (a) The following data fragment occurs in the middle of a data stream for which the character-stuffing algorithm described in the text is used: DLE, STX, A, DLE, B, DLE, ETX. What is the output after stuffing?
   (b) When bit stuffing is used, is it possible for the loss, insertion, or modification of a single bit to cause an error not detected by the checksum? If not, why not? If so, how? Does the checksum length play a role here?
   (c) Data link protocols almost always put the CRC in a trailer, rather than in a header.Why? [6+6+4]

3. (a) What is bridge? Explain the operation of a LAN bridge from 802.3 to 802.4.
   (b) Explain the operation of transparent bridge. [8+8]

4. (a) Give three examples of protocol parameters that might be negotiated when a connection is set up.
   (b) Are there any circumstances when a virtual circuit service will (or at least should) deliver packets out of order? Explain.
   (c) Assuming that all routers and hosts are working properly and that all software in both is free of all errors, is there any chance, however small, that a packet will be delivered to the wrong destination? [6+6+4]

5. (a) Briefly explain the concepts of Flow Control and Buffering.
   (b) Imagine that a two-way handshake rather than a three-way handshake were used to set up connections. In other words, the third message was not required. Are deadlocks now possible? Give an example or show that none exist. [8+8]

6. (a) Briefly discuss about the ways network can differ.
   (b) Explain in detail Firewall operation. [8+8]

7. (a) What is Nagle's algorithm? Explain the problem of silly window syndrome: suggest a solution to this problem.
   (b) Draw and explain the AAL1 cell format, headers and trailers. [8+8]
8. (a) What is DNS? Briefly discuss DNS Namespace.
   (b) Explain, in detail principal DNS resource record types. [8+8]

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

Answer any FIVE Questions
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1. (a) List two advantages and two disadvantages of having international standards for network, Protocols?
   (b) With a neat diagram, explain the functionality of layers, protocols and interfaces. [8+8]

2. (a) The following data fragment occurs in the middle of a data stream for which the character-stuffing algorithm described in the text is used: DLE, STX, A, DLE, B, DLE, ETX. What is the output after stuffing?
   (b) When bit stuffing is used, is it possible for the loss, insertion, or modification of a single bit to cause an error not detected by the checksum? If not, why not? If so, how? Does the checksum length play a role here?
   (c) Data link protocols almost always put the CRC in a trailer, rather than in a header.Why? [6+6+4]

3. (a) What is time domain reflectometry? Write about 802.3 cabling.
   (b) Draw and Explain 802.3 frame format. [8+8]

4. (a) A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps?
   (b) Briefly discuss about congestion control in VC subnets. [8+8]

5. (a) Imagine a generalized n-army problem, in which the agreement of any two of the armies is sufficient for victory. Does a protocol exist that allows blue to win?
   (b) Suppose that the clock-driven scheme for generating initial sequence numbers is used with a 15-bit wide clock counter. The clock ticks once every 100msec, and the maximum packet lifetime is 60sec. How often need resynchronization take place
      i. in the worst case?
      ii. when the data consumes 240 sequence numbers/min?
   (c) Why does the maximum packet lifetime, T, have to be large enough to ensure that not only the packet, but also its acknowledgements, have vanished? [6+6+4]

6. (a) What is tunneling? When it is used? Is it used in wireless LAN's?
   (b) Briefly discuss about connection less Internetworking. [8+8]
7. (a) Draw and explain the structure of the ATM Adaptation layer.
   (b) Draw and explain the AAL1 cell format, headers and trailers. [8+8]
8. (a) Explain in detail methods of DES chaining.
   (b) Briefly discuss about IDEA. [8+8]

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Code No: RR320503 **Set No. 3**

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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) Two networks each provide a reliable connection oriented service. One of them offers a reliable byte stream and other offers a reliable message stream. Are they identical? If so, why is distinction made? If not give an example of how they differ?
   (b) List two advantages and two disadvantages of having international standards for network, Protocols? [8+8]

2. (a) Imagine a sliding window protocol using so many bits for sequence numbers that wrap around never occurs. What relations must hold among the four window edges and the window size?
   (b) PPP is based closely on HDLC, which uses bit stuffing to prevent accidental flag bytes within the payload from causing confusion. Give at least one reason why PPP uses character stuffing instead. [8+8]

3. (a) Explain five key Assumptions in Dynamic channel allocation in LANs and MANs.
   (b) Explain the multiple access protocol using which the stations about their transmissions as soon as they detect a collision? [8+8]

4. (a) With an example, explain Hierarchical Routing Algorithm.
   (b) With an example, explain multicast Routing Algorithm. [8+8]

5. (a) Briefly discuss about Transport Layer quality of service parameters.
   (b) Define the following terms.
      i. Option Negotiation
      ii. Transport quality
      iii. Transport service user
      iv. Transport service provider. [8+8]

6. (a) Briefly discuss ICMP.
   (b) With an example, explain Address resolution protocol. [8+8]

7. (a) Give the format of UDP segment and TCP segment? Explain when UDP is preferred to TCP?
   (b) What are blocking calls, primitives and non-blocking primitives? [8+8]

8. (a) What is MOSPF? Discuss briefly about Multicast Backbone.
   (b) Draw and Explain the hardware architecture of a Simple set-top box. [8+8]

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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) List two advantages and two disadvantages of having international standards for network, Protocols?
   (b) Write short notes on interfaces and services of ISO layers. [8+8]
2. (a) The following data fragment occurs in the middle of a data stream for which the character-stuffing algorithm described in the text is used: DLE, STX, A, DLE, B, DLE, ETX. What is the output after stuffing?
   (b) When bit stuffing is used, is it possible for the loss, insertion, or modification of a single bit to cause an error not detected by the checksum? If not, why not? If so, how? Does the checksum length play a role here?
   (c) Data link protocols almost always put the CRC in a trailer, rather than in a header.Why? [6+6+4]
3. (a) Explain static channel allocation in LANs and MANs.
   (b) Explain five key Assumptions in Dynamic channel allocation in LANs and MANs. [8+8]
4. (a) What is Broadcasting? With an example, explain about Reverse path forwarding
   (b) With an example, explain multicast Routing Algorithm. [8+8]
5. (a) What is forbidden region? Explain three-way handshake protocol used for establishing connection.
   (b) Explain in detail Four protocol scenarios for releasing a connection. [8+8]
6. (a) Briefly discuss about Concatenated Virtual Circuits.
   (b) Explain firewalls, packet filter and a proxy in detail. [8+8]
7. (a) Why does the maximum packet lifetime, T, have to be large enough to ensure that not only the packet, but also its acknowledgements, have vanished?
   (b) AAL 3/4 allows multiple sessions to be multiplexed onto a single virtual circuit. Give an example of a situation in which that has no value. Assume that one virtual circuit has sufficient bandwidth to carry all the traffic.
   (c) What is the payload size of the maximum length message that fits in a single AAL 3/4 cell? [5+6+5]

8. (a) What is the role of SMI in network management?
   (b) What is a key distribution centre? What is a certificate authority?
   (c) In what way does a public key encrypted message digest provide a "better" digital signature than using public key encrypted message? [5+6+5]

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