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

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2008
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) 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) What is collision free protocols? Explain Binary count down protocol.
   (b) Explain in detail, Adaptive free walk protocol. [8+8]
4. What is congestion? How does it differ from flow control? Discuss about the general principles of congestion? Briefly discuss about policies that affect congestion. [16]
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 ICMP.
   (b) With an example, explain Address resolution protocol. [8+8]
7. (a) Draw and explain in detail the TCP Header.
   (b) Briefly discuss TCP connection Management. [8+8]
8. (a) PGP does not support canonicalization as does PEM. Why not?
   (b) Assuming that everyone on the Internet used PGP, could a PGP message be sent to an arbitrary Internet address and be decoded correctly by all concerned? Discuss your answer. [8+8]

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

Answer any FIVE Questions
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1. (a) Explain in detail ISO-OSI reference model.
   (b) Write short notes on interface, service and protocol. [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 the operation of source Routing Bridges.
   (b) Compare and contrast Transparent and Source routing bridges. [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) 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.
   (b) Datagram fragmentation and reassembly are handled by IP and are invisible to TCP. Does this mean that TCP does not have to worry about data arriving in the wrong order? [8+8]
6. (a) Briefly discuss about connection less Internetworking.
   (b) Explain firewalls, packet filter and a proxy in detail. [8+8]
7. (a) What is Nagle's algorithm? Explain the problem of silly window syndrome: suggest a solution to this problem.
   (b) Briefly discuss about TCP timer management. [8+8]
8. (a) What is the difference between message confidentiality and message integrity? Can you have one without the other? Justify your answer.

(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? [6+6+4]

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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) Write any four reasons for using layered protocols.
   (b) Compare and contrast OSI and TCP/IP models. [8+8]
2. (a) Compare and contrast SLIP and PPP.
   (b) Draw and explain HDLC frame format. [8+8]
3. (a) Explain the operation of source Routing Bridges.
   (b) Measurements of a slotted ALOHA channel with an infinite number of users show that 10 percent of the slots are idle.
      i. What is the channel load, G?
      ii. What is the throughput?
      iii. Is the channel under loaded or overloaded? [8+8]
4. (a) With an example, explain Hierarchical Routing Algorithm.
   (b) With an example, explain multicast Routing Algorithm. [8+8]
5. (a) 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.
   (b) Datagram fragmentation and reassembly are handled by IP and are invisible to TCP. Does this mean that TCP does not have to worry about data arriving in the wrong order? [8+8]
6. (a) Briefly discuss about the ways network can differ.
   (b) Briefly discuss about IP address classes and special IP addresses. [8+8]
7. (a) Suppose that the TCP congestion window is set to 18K bytes and a timeout occurs. How bit will the window be if the next four transmission bursts are all successful? Assume that the maximum segment size is 1 KB.
   (b) If the TCP round-trip time, RTT, is currently 30 msec and the following acknowledgements come in after 26,32, and 24msec, respectively. What is the new RTT estimate? Use $\alpha = 0.9$.
   (c) Datagram fragmentation and reassembly are handled by IP and are invisible to TCP. Does this mean that TCP does not have to worry about data arriving in the wrong order? [6+6+4]

8. (a) Explain in detail methods of DES chaining.
   (b) Briefly discuss about IDEA. [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) Explain in detail ISO-OSI reference model.
   (b) Write short notes on interface, service and protocol. [8+8]
2. (a) Briefly, explain about the DLL design issues.
   (b) If the bit string 0111101111101111110 is bit stuffed. What is the output of the string? [8+8]
3. (a) What is meant by contention systems.
   (b) Explain CSMA/CD protocol.
   (c) Explain any one Collision free protocol. [4+6+6]
4. (a) Write short notes on:
      i. Choke packet
      ii. Load shedding
      iii. Jitter control.
   (b) With an example, explain any one adaptive routing algorithm. [8+8]
5. (a) 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.
   (b) Datagram fragmentation and reassembly are handled by IP and are invisible to TCP. Does this mean that TCP does not have to worry about data arriving in the wrong order? [8+8]
6. (a) What is internet work routing? Explain interior gateway and exterior gateway protocols.
   (b) What is three bears problem? Write short notes on CIDR. [8+8]
7. (a) Can AAL 1 handle messages shorter than 40 bytes using the scheme with the Pointer field? Explain your answer.
   (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 sinlge AAL 3/4 cell? [6+6+4]

8. (a) What is Cryptanalysis? Briefly discuss about substitution cipher, transposition ciphers and one-time pads.

(b) Explain any one secrete key algorithm. [8+8]

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