

**IV B.Tech. I Semester Regular Examinations, November -2005**  
**COMPUTER NETWORKS**  
( Common to Electronics & Communication Engineering, Electronics &  
Instrumentation Engineering, Bio-Medical Engineering and Electronics &  
Telematics)

**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) Draw & Explain about the PPP frame format.  
(b) A bit string, 011110111110111110, needs to be transmitted at DLL. What is the string actually transmitted after bit stuffing. [8+8]
3. (a) Explain the MAC sublayer functions.  
(b) What are the five key assumptions taken into consideration, while studying channel allocation methods? [11+5]
4. (a) Briefly discuss Network layer design issues.  
(b) Briefly discuss the concepts of Flow control & Buffering in Transport layer. [8+8]
5. (a) What is Congestion? Briefly discuss the policies in DLL, NL & TL that affect congestion.  
(b) It has been said that flow control and congestion control are equivalent. Is this true for the internet connection oriented service? Are the objectives of flow control and Congestion control are same? [10+6]
6. (a) What is fragmentation? Why is it important in internet working? Explain transparent and Non-transparent fragmentations.  
(b) Draw & Explain the IPV6 header format. [8+8]
7. (a) Draw & Explain about the TCP header frame format.  
(b) Explain Nagle's algorithm in TCP transmission policy. [8+8]
8. (a) Write short notes on the importance of DES chaining.  
(b) Explain in detail SNMP model. [8+8]

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1. (a) Briefly explain about the TCP/IP reference model.  
(b) Compare and contrast OSI and TCP/IP models. [8+8]
2. (a) What is SLIP? What are the disadvantages of it.  
(b) What is the remainder obtained by dividing  $x^7 + x^5 + 1$  the generator polynomial  $x^3 + 1$ ? [8+8]
3. (a) Compare and contrast pure ALOHA & Slotted ALOHA.  
(b) Consider the delay of pure ALOHA Vs slotted ALOHA at low load. Which one is less? Explain your answer. [8+8]
4. (a) Compare and contrast Virtual Circuits Vs Datagram subnets.  
(b) What is initial connection protocol? Briefly discuss the concept of addressing in transport layer. [6+10]
5. (a) Briefly discuss the General principles of Congestion control.  
(b) Compare and contrast leaky bucket token bucket algorithm. [8+8]
6. (a) What is internet work routing? Explain interior gateway and exterior gateway protocols.  
(b) Write short notes on CIDR. [10+6]
7. (a) Write Brief note on TCP timer management.  
(b) The maximum payload of a TCP segment is 65,495. Why was such a strange number chosen?  
(c) What is the importance of SYN and ACK fields in TCP frame format? [6+5+5]
8. (a) Write short notes on Breaking DES.  
(b) Write short notes on the user agent and message format of Email. [8+8]

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1. (a) Explain in detail data link layer design issues.  
(b) Given 1101011011 data frame and generator polynomial  $G(x) = x^4 + x + 1$ , derive the transmitted frame. [8+8]
2. (a) Explain the importance of sequence numbers for Acknowledgements.  
(b) Data Link Layer protocols almost always put the CRC in a trailer rather than in a header. Why? [10+6]
3. (a) Explain CSMA protocols.  
(b) Write short notes on Adaptive tree walk protocol. [8+8]
4. (a) What is optimality principle? With an example, explain distance vector routing algorithm.  
(b) Explain the need of three-way hand shake protocol for establishing connection in Transport layer ? [8+8]
5. (a) Explain any one technique which is adopted in ATM networks to control Congestion.  
(b) Give three examples of protocol parameters that might be negotiated when a connection is setup. [8+8]
6. (a) Briefly discuss ICMP.  
(b) A network on the internet has a subnet mask of 255.255.240.0. What is the maximum no. of hosts it can handle.  
(c) What is three bears problem? [6+5+5]
7. (a) Write a detail note on ATM service categories.  
(b) Explain any two ATM AAL layer protocols. [8+8]
8. (a) Write short notes on public key algorithms.  
(b) Write shot notes MMIME and SMTP [8+8]

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1. (a) What is pipelining? With an example, explain Goback-n sliding window protocol.  
(b) Draw & Explain HDLC frame format. [8+8]
2. (a) Explain in detail about the Elementary Data link protocols.  
(b) A channel has a bit rate of 4 kbps and a propagation delay of 20msec. For what range of frame sizes does stop & wait give an efficiency of at least 50%. [8+8]
3. (a) Write short notes on WDMA protocols.  
(b) Explain CSMA/CD protocol. [8+8]
4. (a) What is a Routing algorithm? Briefly discuss about any one adaptive routing algorithm.  
(b) Explain Transport service primitives. [10+6]
5. (a) Explain the Congestion control methods in Datagram subnets.  
(b) A computer on a 6 Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to a capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps?  
(c) Write short notes on "Load shedding". [5+6+5]
6. (a) Draw & Explain IPV4 header format.  
(b) Write short notes on Tunneling. [8+8]
7. (a) Write a detail note on ATM Quality of service.  
(b) Write short notes on SSCOP. [8+8]
8. (a) Write detail note on Message Digest.  
(b) Write short notes on Email privacy & Emile Gateways. [8+8]

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