

6E3201

Roll No. \_\_\_\_\_

Total No. of Pages : **4****6E3201****B.Tech VI Semester (Main/Back) exam. May, 2012****Computer Engineering****6CS1 Computer Networks****Common to CS & IT****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24***Instructions to Candidates:*

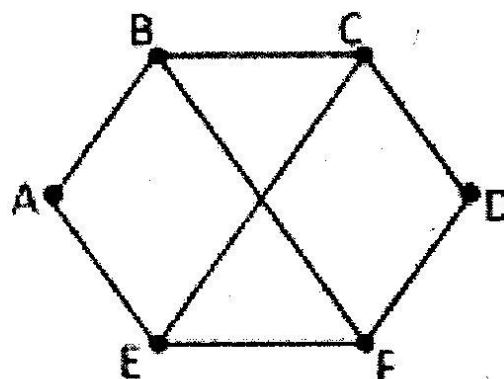
*Attempt any **five** questions, selecting one question from each unit.  
All Question carry **equal** marks. Schematic diagrams must be shown  
wherever necessary. Any data you feel missing suitably be assumed  
and stated clearly.*

*Units of quantities used/ calculated must be stated clerly.*

Use of following supporting material is permitted during examination. (Men-  
tioned in form No. 205)

1. \_\_\_\_\_ **Nil** \_\_\_\_\_2. \_\_\_\_\_ **Nil** \_\_\_\_\_**Unit-I**

1. (a) Flooding is used to distribute link state packets. How the population of link state packets is controlled Explain . 4
- (b) Construct the link state packet. buffer for the network shown in fig 1. at node B.



Assume suitable values for fields not shown in the fig. 5

- (c) Buffering of data at receiving end improves the quality of service though at some cost. Agree or disagree with reasons and example . 4
- (d) Define jitter . Why is it important to control it ? Explain. 3

Or

1. (a) In leaky bucket algorithm, should one packet independent of size of packet be allowed or constant amount of data be allowed to flow? Discuss. 4
- (b) Imaging a flow specification that has a maximum packet size of 10 million bytes/sec, a token bucket -size of 1 million bytes, and a maximum transmission rate of 50 million bytes/Sec. How long can a burst at maximum speed last? 5
- (c) An ATM network uses a token bucket scheme for traffic shaping. A new token is put into bucket every 5 us. Each token is good for one cell of 53 bytes. What is the maximum sustainable data rate? 3
- (d) For a hierarchical routing with 4500 routers, compute the size of cluster and region to minimize the routing table entries. Assume a maximum number of 3 levels. 4

## Unit-II

- 2 (a) Under what circumstances the following internetworking technique will be preferred : 6
  - (i) Multiprotocol Router
  - (ii) Tunneling.
- (b) What are the values of DF and MF flags when a fragment is fragmented again? Show the flags in tabular frame. 3
- (c) Assume that addresses starting 194.24.0.0 are to be allocated as under

Organization Id	Ho. Of addres required	Interface
1	2048	1
2	4096	2
3	1024	3

- (i) Design the address space and network for the about for CIDR. 4
- (ii) To which interface a packet with destination address = 194.24.17.4 will be switched? Show all calculations. 3

Or

- 2 (a) Define network Address Translation. How the outgoing and incoming packets are made to reach to its destination in the presence of a NAT box? Explain. 1+3=4



(b) A router has following CIDR entries :

Subnet No.	Subnet mask	Next hop
128.96.39.0	255.255.255.128	0
128.96.39.128	255.255.255.128	1
128.96.40.0	255.255.255.128	2
192.4.153.0	255.255.255.192	3
Default		4

To which nexthop each of the following addresses will be forwarded :

(i) 128.96.39.10

(ii) 128.96.40.12

(iii) 128.96.40.151

(iv) 192.4.153.17

(v) 192.4.153.90

Show all calculations.

$$2+2+2+3+3=12$$

### Unit-III

3 (a) Why it is important that two identically numbered TPVs are never outstanding at the same time? What strategies are used to ensure it? Explain. 2+4=6

(b) Show that the three way handshaking used for connection release is immune to failures if

(i) Final Ack lost

(ii) Response to DISCONNECT\_REQUEST is lost

(iii) All data except DISCONNECT\_REQUEST is lost. 6

(c) A Client sends a 128 byte request to a server located 100 km away over a 1 gbps link. Compute the efficiency of line during RPC. 4

Or

3. (a) Show that transport layer can recover from crash of network layer and not recover if transport layer crashes. 8

(b) What factors differentiates the sliding window protocol design used in data link layer and transport layer? Enumerate. 5

(c) Explain the terms “upward multiplexing” and “downward multiplexing” with reference to transport layer. 3

### Unit-IV

4 (a) Explain the purpose of function of “window size” field in TCP. Comment on the sufficiency of size of the field in a high bandwidth- high delay network environment. 4

(b) Does TCP use the 3-way handshaking for connection establishment and connection release? Discuss the processes used for the activities. Draw suitable diagrams. 4



- (c) A TCP machine is sending full window of 65535 bytes over a 1-Gbps line that has 10 ms one way delay. What is the maximum throughput achievable? What is the line efficiency?  $2+2=4$
- (d) What is the delay – bandwidth product for a 50-mbps channel on a geostationary satellite? if the packets are all 1500 bytes (including overheads ) how big the window should be?  $2+2=4$

Or

- 4 (a) Under what condition the following fields are significant?
- (i) Acknowledgement number
  - (ii) Urgent pointer
- Also explain the interpretation of the value contained in the fields if these are significant.  $1+1+1.5+1.5=5$
- (b) TCP does not have a segment length field whereas IP has. Justify that the total length field in TCP is not required. 4
- (c) If the TCP round trip time RTT is currently 30 msec and the following acknowledgements come in after 26,32,24,24 msec respectively, what is the new RTT estimate using Jacobson's algorithm? Assume  $\alpha = 0.9$ . 4
- (d) Assume that TCP client is expecting to get byte 3001. It receives a segment with sequence number 3001 that carries 400 bytes. If the client has no data to send at this moment and has acknowledged the previous segment, what will the client do? Justify your answer. 3

## Unit-5

- 5 (a) Which protocol enables delivery and storage of e-mails when both sender and receiver are not on-line at the same time? Explain the protocol briefly. 4
- (b) Explain the differences in persistent and non-persistent HTTP. 4
- (c) What is DNS poisoning? Explain the bad effect of DNS poisoning 4
- (d) Explain the authoritative and non-authoritative DNS 4

Or

- 5 Write short notes on (not more than 100 words each )
- (a) Name resolution in DNS
  - (b) Performance enhancement of www.
  - (c) Use of cookies in www and HTTP.  $4 \times 4 = 16$
  - (d) File sharing .
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