

GUJARAT UNIVERSITY
B.E. Sem. VII (C.E.) Examination
Data Communication and Networking - II

Saturday, 5th January, 2008]

[Time : 3 Hours
Max. Marks : 100

- Instructions :** (1) Attempt all questions.
(2) Answer to the two sections must be written in separate answer books.
(3) Figures to the right indicate full marks.
(4) Make suitable assumptions wherever required.
(5) All abbreviations have usual meanings.

SECTION I

1 Attempt All (14)

- (a) In CSMA\CD protocol, though there is CS, why CD is required? Explain with reference to propagation delays.
- (b) What are the advantages of using switches instead of hubs for LANs?
- (c) Though MAC address is globally unique, why IP address is required? Why MAC address cannot be used for worldwide routing?
- (d) Why Internet has chosen datagram protocol at Network (IP) layer?

2 Attempt any three. Explain in detail. (18)

- (a) Draw IEEE 802.3 (Ethernet) frame format and describe functions of each field.
- (b) Draw HDLC frame format and describe functions of each field.
- (c) Describe Token Ring Protocol.
- (d) Describe Binary Count Down protocol for retransmissions after collision. What is disadvantage to users?
- (e) Compare Circuit Switching and Packet Switching.
- (f) Compare Virtual Circuit and Datagram services.

3 Attempt any three. Explain in detail. (18)

- (a) CRC algorithm for error detection.
- (b) Sliding Window Flow Control.
- (c) Go Back-n protocol operation for (i) Errored frame & (ii) Lost ACK.
- (d) Shortest path routing algorithm.
- (e) Leaky Bucket Congestion Control algorithm.
- (f) Functions of layers of X.25 protocol.

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SECTION-II

4 Attempt all.

(14)

- (a) Why error control and flow control are supported at both DLL and TL? What is the difference in functionality?
- (b) What is fragmentation? Why is it required?
- (c) What is subnetting? What is advantage?
- (d) What is socket? Why is it required?

5 Attempt any three. Explain in detail.

(18)

- (a) Different classes of IP addressing scheme and their addressing ranges in terms of binary and decimal numbers. What is dotted decimal notation?
- (b) Draw IP datagram header format and describe function of each field.
- (c) Draw TCP header format and describe function of each field.
- (d) Explain three step connection establishment procedure at TCP.
- (e) What is subnetting, supernetting, Intranet, extranet?

6 Attempt any three. Explain in detail.

(18)

- (a) What is ISDN? What are its advantages over PSTN? What are the services provided?
- (b) Describe various ISDN functional groups.
- (c) Draw FR frame format and explain function of each field.
- (d) Draw ATM UNI cell format and explain function of each field.
- (e) What is SONET?. Draw protocol architecture and describe functions of each layer.