19

[This question paper contains 6 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5721 **E**

Unique Paper Code : 42347610

Name of the Paper : Computer Networks

Name of the Course : **B.Sc. (Programme) DSE**

Semester : VI

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. The paper has **two** sections.
3. **All** questions in **'Section A'** are compulsory.
4. Attempt any **five** questions from **'Section B'**.
5. Parts of a question must be answered together.

SECTION A

1. (a) Which OSI layer provides reliable message delivery from process on sender to process on destination? Which layer is responsible for framing in the OSI model. (2)

P.T.O.

(b) What is a PAN in computer networks? Give an example. (2)

(c) How is the concept of filtering the frames used in bridging? How is a bridged network able to exhibit higher overall performance than a single LAN? (2)

(d) In which mode of communication can data flow in one direction only? Define that mode with an example. (2)

(e) A bit string, 0111110111101111111, needs to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing? (2)

(f) Differentiate between unicasting, multicasting and broadcasting. (3)

(g) What are the main functions of the network layer in the ISO OSI model? (3)

(h) Explain the purpose of caching for web access? What happens if the document on the web server changes after a browser stores a copy in its cache? (3)

(i) Eight channels, each with a 100 kHz bandwidth, are to be multiplexed together. What is the minimum bandwidth of the link if there is a need for a guard band of 10 kHz between the channels to prevent interference? Explain with the help of a diagram. (3)

(j) Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation. Which class does this address belong to? (3)

SECTION B

(Attempt any **five***)*

2. (a) What principles were applied to arrive at the seven layers of OSI reference model? How are OSI and ISO related to each other? (6)

(b) Suppose a computer sends a packet at the network layer to another computer somewhere in the Internet. The logical destination address of the packet is corrupted. What happens to the packet? How can the source computer be informed of the situation? (4)

P.T.O.

3. (a) How is HTML structured? What are tags in HTML? Explain using examples of any two tags. How is XML similar to HTM1L and how is it different? (6)

(b) Name any four network topologies? Give an advantage of each type. (4)

4. (a) Compare and contrast LED and semiconductor laser the two light sources used for signalling in Optical Fiber. (6)

(b) Explain working of MEO (Medium Earth Orbit) satellites in communication. (4)

5. (a) Frames of 1000 bits are sent over a 1-Mbps channel using a geostationary satellite whose propagation time from the earth is 270 msec. Acknowledgements are always piggybacked into data frames. The headers are very short. Three-bit sequence numbers are used. What is the maximum achievable channel utilization for:

(i) Stop-and-wait?

(ii) Go-back-n?

(iii) Selective repeat? (6)