(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0386 Roll No. | | | | | | | | | | |

# B. Tech.

## (SEM. VIII) THEORY EXAMINATION 2010-11

## DATA COMMUNICATION NETWORKS

*Time : 3 Hours* *Total Marks : 100*

**Note :** (1) Attempt **all** questions.

(2) All questions carry equal marks.

1. Attempt any **two** parts of the following questions : **(10×2=20)**

(a) What are the various advantages of layered architecture ? Explain the view of layers, protocols, and services for the development of OSI reference model.

(b) What is 802.11 medium access controls ? How it works for the reliable data delivery, access control, and security.

(c) What are the differences between virtual circuit and datagrams ? Why packet switching is preferred in data networks ?

2. Attempt any **four** parts of the following questions : **(5×4=20)**

(a) Explain how a data link layer protocol that manage communication and packet framing between DTE and DCE device in X.25 network.

(b) Explain that the maximum efficiency of pure ALOHA is 1/(2e)

(c) Why synchronous data transmission systems are more efficient than asynchronous data transmission system ? Explain it.

(d) What is the advantage of sliding window protocol over other data link layer protocols ?

(e) A system can support a data rate of 100 kbps. How many users can it multiply if each user is a 3 kHz bandwidth signal, sampled at the Nyquist rate and using 7 bit digitization coding ?

3. Attempt any **two** parts of the following questions : **(10×2=20)**

(a) What are the various design issues involved in the network layer ? Explain the different routing algorithms used to rout the packets from source machine to the destination machines.

(b) What is the difference between network layer delivery and transport layer delivery ? Explain the principle of congestion control.

(c) Enlist three errors that may be experienced during communication and corrected by the TCP service. How does the TCP service correct these errors ?

4. Attempt any **two** parts of the following questions : **(10×2=20)**

(a) Explain the number of specific functions of transport layers. Mention the various types of transport layer protocols giving their merits and demerits.

(b) With the help of suitable example discuss the use of remote bridges. Write a brief note on Bridge forwarding and filtering.

(c) What is IP datagram ? Differentiate between IP datagram format and TCP segment format. How TCP is used to add connection oriented reliable feature to the service of IP. Explain.

5. Attempt any **four** parts of the following quesitons : **(5×4=20)**

(a) Explain the operation of HDLC as a bit oriented link control protocol.

(b) Differentiate between TCP and UDP.

(c) Explain two methods for transmitting ATM cells.

(d) Explain stop and wait ARQ error control techniques.

(e) Write the frame format of FDDI.