DiplETE – ET/CS (OLD SCHEME)

Code: DE21/DC11   **Subject: DATA COMMUNICATION & NETWORKS**
Time: 3 Hours   **Max. Marks: 100**

JUNE 2010

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1   **Choose the correct or the best alternative in the following:**   **(2×10)**

a. A television (TV) transmission is an example of which type of transmission?

   (A) Simplex   **(B)** Half duplex
   (C) Full duplex   **(D)** Automatic

b. When installing an Ethernet 10BASE-T network, what type of cable is used?

   (A) Fiber Optic   **(B)** Coaxial Cable
   (C) Twisted Pair   **(D)** Wireless

c. What is the bandwidth of a signal that ranges from 35 kHz to 95 kHz?

   (A) 130 kHz   **(B)** 60 kHz
   (C) 35 kHz   **(D)** 95 kHz

d. A computer network which provides long distance transmission of data, images, and sound

   (A) LAN   **(B)** WAN
   (C) VAN   **(D)** MAN

e. The layer that handles error detection and error correction is

   (A) Presentation layer   **(B)** Network layer
   (C) Transport layer   **(D)** Session layer

f. A LAN that uses either radio or infrared as the transmission medium is called

   (A) Wireless LAN   **(B)** Wired LAN
   (C) Virtual LAN   **(D) (A) & (C)**

g. The unit of information transferred across a datalink is known as:

   (A) Frame   **(B)** Packet
   (C) Chunk   **(D)** Datagram.

h. A telephone switch is a good example of which of the following types of switches:

(A) Packet   **(B)** Buffer
(C) Fabric   **(D)** Circuit

i. What is the port number used by FTP to transfer data?

(A) 21   **(B)** 22
(C) 20   **(D)** 19

j. Which of the following IP protocols uses a hierarchical addressing or naming structure?

(A) DNS   **(B)** ARP
(C) BOOTP   **(D)** LDAP

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q. 2   a.   Explain under what circumstances asynchronous and synchronous transmission techniques are employed? **(6)**

     b. Differentiate:
         (i) Analog and Digital Transmission.   **(3)**
         (ii) DTE and DCE   **(3)**

       c.   "A full duplex line is faster since it avoids the delay that is excess in half duplex circuit." Explain this sentence.   **(4)**

Q. 3   a.   Give a brief description of the application and limitations of the following types of transmission media: **(4×3)**

         (i)   Two-wire open lines   (ii)   Twisted Pair Lines
         (iii) Co-axial Cable   (iv)   Microwaves.

       b. Establish the similarity and difference between WDM and FDM?   **(4)**

   Q.4   a.   How do you decide whether to use a bridge or a repeater? How many repeaters may be put on an Ethernet?   **(6)**

       b.   Explain the design issues of an application layer including FTAM, e-mail and virtual terminals. **(6)**

       c. Give a note on SNMP architecture.   **(4)**

Q.5   a. What happens if layer model of OSI is not available? Explain with necessary cases.   **(6)**

       b. Briefly describe the functions offered by transport layer in OSI/ISO model.   **(5)**

       c. What are the two principle tasks the presentation layer implements?   **(5)**

Q. 6   a. Differentiate between Packet switching and Circuit switching.   **(6)**

     b. Explain how can terminals of different speeds communicate using X.25   protocols?   **(5)**

     c. Explain flow control and windowing.   **(5)**

Q. 7   a. Differentiate between IPv6 and IPv4. **(6)**

     b. A token ring has 5 stations and a total wire length of 230 mts. How many bits of delay must the monitor insert into the ring? Repeat this for 4 Mbps and 16 Mbps. Assume propagation delay as 2.3×10^8 ms.   **(10)**

Q. 8   a. The original development work in ATM was carried out in the telecommunications sector, not in the computer sector. What aspects of ATM, from your brief exposure to it, would tend to support this? Mention at least two issues in details.   **(10)**

     b. Discuss the TCP/IP Architecture.   **(6)**

Q. 9   a. What methods are implemented to control error in data link layer?   **(8)**

     b. Discuss Token Passing Mechanism in detail.   **(8)**