

DipLETE – ET/CS (OLD SCHEME)

Code: DE21 / DC11

Time: 3 Hours

Subject: DATA COMMUNICATION & NETWORKS

Max. Marks: 100

JUNE 2011

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.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- 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. Where are routers defined in the OSI model?

- | | |
|---------------------|---------------------|
| (A) Physical layer | (B) Transport layer |
| (C) Data Link layer | (D) Network layer |

b. Which protocol working at the transport layer provides a connectionless service between hosts?

- | | |
|---------|---------|
| (A) UDP | (B) ARP |
| (C) TCP | (D) IP |

c. Segmentation of a data stream happens at which layer of the OSI model?

- | | |
|---------------------|---------------------|
| (A) Physical layer | (B) Transport layer |
| (C) Data Link layer | (D) Network layer |

d. TCP/IP model has _____ layers.

- | | |
|-------|-------|
| (A) 7 | (B) 5 |
| (C) 3 | (D) 4 |

e. Sending a file from your personal computer's primary memory or disk to another computer is called

- | | |
|----------------|-----------------|
| (A) uploading | (B) downloading |
| (C) logging on | (D) hang on |

f. Which of the following performs modulation and demodulation?

- | | |
|-------------------|---------------|
| (A) fibre optic | (B) satellite |
| (C) coaxial cable | (D) modem |

- g. A required characteristics of an on-line real-time system is:
- (A) more than one CPU (B) off-line batch processing
(C) no delay in processing (D) all of the above
- h. Communication circuits that transmit data in both directions but not at the same time are operating in:
- (A) Simplex mode (B) Half duplex
(C) Full duplex (D) Asynchronous model
- i. A communication device that combines transmission from several I/O devices into one line is a:
- (A) Concentrator (B) Modifier
(C) Multiplexer (D) Full duplex line
- j. ITU-T's X.200 standard describes:
- (A) TCP/IP model (B) ATM networks
(C) OSI model (D) ISDN networks

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

- Q.2** a. What is the channel capacity for a voice channel with a 3100 Hz bandwidth and a signal to noise ratio of 30 dB? (4)
- b. List the Transmission media used in computer communication. Compare multi-point communication over point to point communication. (6)
- c. Briefly explain the various modulation techniques used in computer communication. (6)
- Q.3** a. Briefly explain Half Duplex and Full Duplex transmission. (4)
- b. What is error detection? Briefly explain the CRC method of Error detection. (6)
- c. Write short note on OSI model and TCP/IP model. (6)
- Q.4** a. What is circuit switching? Briefly explain the various phases involved in communication via circuit switching. Compare it with packet switching. (8)
- b. What is multiplexing? Briefly explain FDM and TDM Multiplexing along with their advantages and disadvantages. (8)

- Q.5** a. What is a bridge? What are the reasons of using multiple LANs connected by bridges instead of using one large LAN? (8)
- b. Write short notes on the following:-
 (i) IPv6
 (ii) IP multicasting (8)
- Q. 6** a. Briefly explain fixed, flooding, random and adaptive routing strategies. (8)
- b. What are the key differences between frame relaying and conventional X.25 packet switching service. (4)
- c. Briefly explain UDP. (4)
- Q. 7** a. Briefly explain the principles used in defining the seven layers of OSI reference model (8)
- b. What are different classes of IP addresses? (4)
- c. Briefly explain Bus topology. Also state the problems that are encountered in this topology. (4)
- Q. 8** a. Congestion control schemes available in packet switched and frame relay networks are inadequate for ATM networks. Briefly explain. (8)
- b. Define ISDN. Briefly explain the various principles of ISDN. (8)
- Q. 9** a. Explain the following in detail:-
 (i) SMTP
 (ii) MIME (8)
- b. Write short notes on the following:-
 (i) URL
 (ii) HTTP (4)
- c. Differentiate between the following:-
 (i) Client and Server
 (ii) Gateway and Proxy (4)