

DiplETE – ET/CS (NEW SCHEME)

Time: 3 Hours

JUNE 2012

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

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. The place where telephone companies terminate customer lines and locate switching equipment to interconnect those lines with other networks is called as _____

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|---------------------------|-------------------------------|
| (A) Customer Premises end | (B) Network Service Providers |
| (C) Central office | (D) Customer Care centre |

b. _____ layers of OSI model send frames with the necessary synchronization, error control and flow control.

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

c. In _____ mode of operation, both stations may transmit, but only one at a time.

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|-----------------|-------------------|
| (A) Simplex | (B) Half-Duplex |
| (C) Full-Duplex | (D) All the above |

d. Co-axial cable is used in _____ applications.

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|-----------------------------|--|
| (A) Television distribution | (B) Long-distance telephone transmission |
| (C) Local Area Network | (D) All of the above |

e. In _____ coding scheme, O=transition from high to low in middle of interval and I=transition from low to high in middle of interval.

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|-----------------------------|-------------------|
| (A) Bipolar-AMI | (B) Pseudoternary |
| (C) Differential Manchester | (D) Manchester |

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- f. A feature in which a data frame has a field to hold the sequence number of the frame as well as sequence number for acknowledgement is known as _____
- (A) Stop and wait (B) Go-Back N
(C) Piggy backing (D) Flow control
- g. The data rate provided by DS-I transmission format is
- (A) 2.048 Mbps (B) 1.544 Mbps
(C) 64 Kbps (D) 51.84 Mbps
- h. Virtual Circuit Packet Switching needs _____
- (A) Dedicated path (B) Non-dedicated path
(C) Fixed bandwidth (D) None of the above
- i. In _____ avoidance, the network alerts end systems to growing congestion they intern reduce the offered load to the network.
- (A) Implicit congestion (B) Explicit congestion
(C) Both (A) and (B) (D) None of the above
- j. IEEE 802.ID specification defines the protocol architecture for _____
- (A) LANS (B) Gateways
(C) Bridges (D) None of the above

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

- Q.2** a. List some of the key tasks that must be performed in a data communication systems. (4)
- b. Draw the block diagram of Simplified Data Communication Model and briefly explain each block. (6)
- c. Mention the functions of network, data link and physical layers of the OSI model (6)
- Q.3** a. Define channel capacity and error rate. (4)
- b. Given the specification of a channel as lying between 3 MHz and 4 MHz and SNR=24 dB. Calculate channel capacity (4)
- c. Compare twisted pair, co-axial cable and optical fibers with respect to transmission characteristics. (8)

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- Q.4** a. Draw the Digital Signal Coding format using Bipolar AMI and Differential Manchester for the data 01001100011. (4)
- b. What do you mean by error detection in digital data communication? (6)
- c. Given message, D = 1010001101 and pattern, P = 110101, calculate the transmitted frame, T. (6)
- Q.5** a. Discuss sliding window protocol in detail. (8)
- b. Explain the characteristics of synchronous time division multiplexing. (8)
- Q.6** a. Explain circuit switching in details. (8)
- b. Describe Dijkstra's Algorithm with an example. (8)
- Q.7** a. Discuss with figures, the function, architecture and operation of a bridge. (10)
- b. Briefly explain differential transmission techniques used in infrared LANS. (6)
- Q.8** a. Draw IPv6 Header format and write about various field used in it. (10)
- b. Discuss different IPv6 address format. (6)
- Q.9** Write short notes on:
- (i) Salient features of TCP
- (ii) SMTP (8×2)