ROLL NO. _____

Code: DE69/DC63 Subject: DATA COMMUNICATION & NET

DipIETE – 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 _____

(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.

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

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

(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.

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

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_____ avoidence, 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)**

Q.4 a. Draw the Digital Signal Coding format using Bipolar AMI and Differen 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)**