Code: DE69/DC63/DE118/DC114   **Subject: DATA COMMUNICATION & NETWORKS**

DipIETE – ET/CS (Current & New Scheme)

Time: 3 Hours   **December 2016**   **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. _____ refers to the physical or logical arrangement of a network.
   (A) Topology   **(B)** Mode of operation
   (C) Data flow   **(D)** None of these

b. A _____ is a set of rules that governs data communication.
   (A) protocol   **(B)** forum
   (C) standard   **(D)** None of these

c. In a _____ connection, two and only two devices are connected by a dedicated link.
   (A) multipoint   **(B)** point-to-point
   (C) Both **(A)** and **(B)**   **(D)** None of these

d. _____ is a collection of many separate networks.
   (A) A WAN   **(B)** An internet
   (C) A LAN   **(D)** None of these

e. Which of the following encoding methods does not provide for synchronization?
   (A) RZ   **(B)** NRZ-L
   (C) NRZ-I   **(D)** Manchester

f. PCM is an example of _____ conversion.
   (A) analog-to-analog   **(B)** analog-to-digital
   (C) digital-to-digital   **(D)** digital-to-analog

g. In _____ TDM, slots are dynamically allocated to improve bandwidth efficiency.
   (A) isochronous   **(B)** synchronous
   (C) statistical   **(D)** None of these

h. In _____, we combine signals from different sources to fit into a larger bandwidth.
   (A) line coding   **(B)** block coding
   (C) spread spectrum   **(D)** None of these

i. _____ are used for cellular phone, satellite, and wireless LAN communications.
   (A) Radio waves   **(B)** Infrared waves
   (C) Microwaves   **(D)** None of these

j. In _____, each packet is treated independently of all others.
   (A) circuit switching   **(B)** datagram switching
   (C) frame switching   **(D)** None of these

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

Q.2 a. Draw the figure of communication model and explain it with its all components. **(5)**

b. What is Computer Network? Discuss all types of Computer Networks. **(5)**

c. Why protocol architecture needs for communication? Explain the layers of OSI Model. **(6)**

Q.3 a. Define the following terms: **(4)**
   (i) Simplex   (ii) Full Duplex
   (iii) Multipoint Connection   (iv) Bandwidth

b. Write a short note on coaxial cable. **(4)**

c. Explain Shannon capacity formula. **(4)**

d. List out the characteristics of optical Fiber cable. **(4)**

Q.4 a. Explain Biphase encoding Technique in detail. **(6)**

b. Discuss Amplitude Shift Keying & Frequency Shift Keying. **(5)**

c. Explain Line Configuration with the help of Figure. **(5)**

Q.5 a. How Stop N Wait Control Flow works? **(8)**

b. Explain Synchronous Time Division Multiplexing. **(8)**

Q.6 a. Discuss steps involved in communication via circuit switching. **(6)**

b. Explain Dijkstra's Algorithm with the help of Figure. **(5)**

c. Explain the techniques of congestion control. **(5)**

Q.7 a. Explain different computer network topologies. **(8)**

b. What are the requirements for configuring Wireless LAN? **(8)**

Q.8 a. Which are the requirements needs for internetworking facility? **(8)**

b. Explain in detail IPv4 Header with the help of figure. **(8)**

Q.9 a. How TCP and UDP differ? **(8)**

b. Explain SMTP in detail. **(8)**