Code: AC12/AT10   **Subject: DATA COMMUNICATIONS AND NETWORKS**
Time: 3 Hours   **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 best alternative in the following:**   **(2×10)**

   a. Which of the following performs modulation and demodulation?

      (A) Fiber optics   **(B)** Satellite
      (C) Coaxial cable   **(D)** Modem

   b. Which of the following is an advantage of using fiber optics data transmission?

      (A) resistance to data theft   **(B)** fast data transmission rate
      (C) low noise level   **(D)** all of the above

   c. A baud is always equivalent to

      (A) a byte   **(B)** 16 bits
      (C) 100 bits   **(D)** none of the above

   d. What does the acronym ISDN stand for?

      (A) Indian Standard Digital Network
      (B) Integrated Services Digital Network
      (C) Intelligent Services Digital Network
      (D) Integrated Services Data Network

   e. Communication between computers is almost always

      (A) serial   **(B)** parallel
      (C) both series and parallel   **(D)** direct

   f. What is the name given to the exchange of control signals which is necessary for establishing a connection between a modem and a computer at one end of a line and another modem and computer at the other end?

      (A) Handshaking   **(B)** Modem options
      (C) Protocol   **(D)** Duplexing

g. A 2400-character text file has to be transferred using a 1200 baud modem. Can you tell how long will it take?

(A) 2 seconds   (B) 20 seconds
(C) 120 seconds   (D) 12 seconds

h. How many layers are present in OSI model?

(A) 3   (B) 6
(C) 7   (D) 9

i. Which signals are discrete signals?

(A) Analog   (B) Digital
(C) Both   (D) None of the above

j. CSMA means

(A) code sense multiple Aloha   (B) carrier sense multiple aloha
(C) carrier sense multiple access   (D) code sense multiple access

---

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

Q.2 a. Give a short note on peer to peer protocol. **(6)**

b. Write in brief about various layers of OSI reference model. **(10)**

Q.3 a. Define protocols. Write about Classification of Protocols. **(8)**

b. Why Line coding is required? Explain Manchester line coding method in digital communication. **(8)**

Q.4 a. What are basic types of modulation methods for transmission of digital signals? Write about FSK modulation of digital signals. **(8)**

b. Explain features of Asynchronous Transfer mode. **(8)**

Q.5 a. Define the following parameters associated with transmission media:- impedance, capacitance, attenuation, bandwidth. **(4)**

b. Why High level data link control protocols were designed? Draw HDLC frame format and write about various fields of this frame. **(12)**

Q.6 a. Find out the optimum window size if the channel capacity is C bps, frame size is D bits, and round-trip propagation delay is T seconds. Enumerate it for a 50 kbps satellite link if frame size is 500 bits. Assume error free channel. **(8)**

b. Describe media access control and traffic control in FDDI. **(8)**

Q.7 a. Discuss virtual circuit and datagram packet switching with suitable diagrams. **(8)**

     b. Explain Dijkstra's Routing algorithm to find the shortest paths from source nodes to all other nodes. **(8)**

Q.8 a. Write features of Internet Protocol (IP) and Transmission Control Protocol (TCP). **(8)**

     b. Write salient features of B-ISDN asynchronous transfer mode of transmission. **(8)**

Q.9 a. Describe Network management functions and elements. **(8)**

     b. Differentiate between Circuit Switching and Packet Switching. **(8)**