

## AMIETE – CS/IT (OLD SCHEME)

Code: AC12/AT10  
Time: 3 Hours

Subject: DATA COMMUNICATIONS AND 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 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

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

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- 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)