

**AMIETE – CS/IT (OLD SCHEME)**

Time: 3 Hours

**DECEMBER 2011**

Max. Marks: 100

**NOTE: There are 9 Questions in all.**

- Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.
- 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. The transmission medium that carries the message is referred to as the

- (A) sending and receiving device      (B) communication channel  
(C) Protocol      (D) Gateways

b. Data is transmitted using light through a \_\_\_\_ cable.

- (A) Twisted Pair      (B) Coaxial Cable  
(C) Fibre Optic      (D) Microwave

c. Which wireless standard is widely used to connect computers to each other and to the Internet?

- (A) IEEE 802.11      (B) RJ45  
(C) Blueband      (D) Broadband

d. Each computer on the Internet has a unique numeric address called

- (A) Domain address      (B) Protocol Address  
(C) IP Address      (D) Web Address

e. In OSI network architecture, the routing is performed by

- (A) Network Layer      (B) Transport Layer  
(C) Physical Layer      (D) Session Layer

f. Which of the following performs modulation and demodulation?

- (A) Satellite      (B) Modem  
(C) Coaxial Cable      (D) None of the above

Code: AC12/AT10

Subject: DATA COMMUNICATIONS AND NETWORKS

- g. SONET stands for
- (A) Synchronous On-line Network and Asynchronous Transfer Machine
  - (B) Synchronous Optical Network and Asynchronous Transfer Mode
  - (C) System Operator Network and Automated Timing Machine
  - (D) None of the above
- h. FDDI is a token Based LAN standard developed by
- (A) ANSI
  - (B) IEEE
  - (C) ISO
  - (D) CCITT
- i. Telephone Systems may be classified as
- (A) simplex and asymmetrical
  - (B) duplex and asymmetrical
  - (C) duplex and symmetrical
  - (D) simplex and symmetrical
- j. A Network that provides a constant bandwidth for the complete duration of message transfer is a
- (A) Circuit Switched Network
  - (B) Packet Switched Network
  - (C) Cell Switched Network
  - (D) Virtual Private Network

**Answer any FIVE Questions out of EIGHT Questions.**

**Each question carries 16 marks.**

- Q.2** a. Explain with the help of a diagram the layered architecture of TCP/IP model. (8)
- b. What is multiplexing? Explain the functioning of frequency division multiplexing with the help of a suitable diagram. (8)
- Q.3** a. What is the significance of line coding? Discuss various line coding schemes with relevant waveforms. (8)
- b. Explain guided transmission media. Mention the characteristics that distinguish optical from twisted pair or coaxial cable. (8)
- Q.4** a. Explain timing recovery for synchronous services in peer-to-peer protocols. (8)
- b. Describe HDLC protocol. Explain the various types of frames associated with it. (8)
- Q.5** a. Explain the working of CSMA. Discuss the difference between 1-persistent and non-persistent CSMA. (8)
- b. Compare IEEE standards 802.3 and 802.4 with special reference to frame formats. (8)

- Q.6** a. Explain in detail the difference between Connectionless Packet Switching and Virtual Circuit Packet Switching. (8)
- b. Explain arrivals and departures of packets in a FIFO system using:-  
(i) Little's formula  
(ii) M/M/1 Queue (8)
- Q.7** a. Why Internet Protocol is known as best effort delivery service? Explain the various fields of IP datagram in detail. (8)
- b. Compare multicast routing protocols used in TCP/IP. (8)
- Q.8** a. With the help of a block schematic, explain the architecture of RSVP in detail. Explain features of reservation merging. (8)
- b. Explain the features of ATM adaptation layers (AAL1 to AAL5). Explain UNI signalling. (5+3)
- Q.9** Write Short Notes on the following:
- (i) PNNI Routing  
(ii) Integrated services in internet  
(iii) SONET Frame Structure  
(iv) Error Detection (4×4)