ROLL NO. _____

Code: AC12/AT10 **Subject: DATA COMMUNICATIONS & NE S**

AMIETE – CS/IT (OLD 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 best alternative in the following: **(2×10)**

a. Which protocol working at the Transport layer provides a connectionless service between hosts?

(A) IP **(B)** TCP
(C) ARP **(D)** UDP

b. Two or more computers connected so that they can communicate with each other and share information is called a.

(A) Network **(B)** Satellite
(C) Broadcast **(D)** Protocol

c. In OSI network architecture, the dialogue control and token management are responsibility of

(A) Network Layer **(B)** Transport Layer
(C) Session Layer **(D)** Data Link Layer

d. Which of the following communication modes support two-way traffic but in only one direction

(A) Simplex **(B)** Half Duplex
(C) Full Duplex **(D)** Three Quarter Duplex

e. A Router

(A) determines on which outgoing link a packet is to be forwarded.
(B) forwards a packet to all outgoing links.
(C) forwards a packet to the next free outgoing link
(D) forwards a packet to all outgoing links, except the link upon which the packet originated

f. Manchester Encoding is primarily used to

(A) ensure that the line remains unbalanced.
(B) increase the bandwidth of a signal transmitted on the medium.
(C) ensure that a transition occurs in the centre of each bit period
(D) have more than one symbol per bit period.

g. The Internet is an example of

(A) Circuit Switched Network **(B)** Packet Switched Network
(C) Cell Switched Network **(D)** None of the above

h. The loss in signal power as light travels down the fiber is called

(A) Propagation **(B)** Scattering
(C) Interruption **(D)** Attenuation

i. The process of converting analog signals into digital signals so they can be processed by a receiving computer is referred to as:

(A) Modulation **(B)** Demodulation
(C) Synchronizing **(D)** Digitizing

j. Which of the following connection methods would not be used to connect devices between two different offices?

(A) Twisted Pair **(B)** Fibre Optics
(C) Coaxial Cable **(D)** Infrared

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 OSI reference model. **(8)**

b. Discuss signaling and traffic control in telephone network. **(8)**

Q.3 a. Explain error detection and correction mechanisms. Discuss Cyclic Redundancy Check Code in detail with suitable example. **(8)**

b. Describe various types of unguided transmission media for data communication. **(8)**

Q.4 a. Explain working of point to point protocol. Mention the features of Password Authentication Protocol (PAP) and Challenge-Handshake Authentication Protocol (CHAP) in PPP Protocol. **(8)**

b. Explain how ARQ can be used for error correction? How does Go back N ARQ differ from selective repeat ARQ. **(8)**

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Q.5 a. Explain FDDI and its frame structure with the help of a suitable diagram. **(8)**

b. Compare the scheduling approaches in medium access control. **(4)**

c. Give the CSMA-CD equations for

(i) Maximum throughput
(ii) Maximum probability of successful transmissions. **(4)**

Q.6 a. Discuss any two shortest path routing protocols. Why adaptive routing techniques are superior than non adaptive routing techniques. **(8)**

b. Compare virtual circuit and datagram packet switching. **(8)**

Q.7 a. Describe any two internet routing protocols in detail **(8)**

b. What are the major differences between IPv4 and IPv6? Discuss header format and Network addressing with reference to IPv6. **(8)**

Q.8 a. Discuss the Real time transport protocol and its architecture in detail. **(8)**

b. How does ATM differ from frame relay? List and briefly define the ATM service categories. **(8)**

Q.9 Write Short Note on the following:

(i) SONET Multiplexing
(ii) B-ISDN Reference Model
(iii) Multiprotocol Label Switching
(iv) HDLC Data Link Control **(4×4)**