AMIETE – ET (OLD SCHEME)

Code: AE2 | **DECEMBER 2009** | **Subject: COMPUTER NETWORKS**
Time: 3 Ho | | **Max. Marks: 100**

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.**
- **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. Session layer checkpoints _____.

   (A) Allows just a portion of a file to be resent
   (B) Detect and recover errors
   (C) Control the addition of headers.
   (D) Are involved in dialog control.

b. ICMP v6 includes_____.

   (A) IGMP   (B) ARP
   (C) RARP   (D) Both (A) and (B)

c. Frame Relay operates in the _____.

   (A) Physical layer
   (B) Data link layer
   (C) Physical and data link layers
   (D) Physical, data link and network layers

d. AAL corresponds to the following technology:

   (A) ISDN
   (B) ATM
   (C) Frame Relay
   (D) B-ISDN.

e. A bridge has access to the _____ address of a station on the same network.

   (A) Physical
   (B) Network
   (C) Service Access Point
   (D) All of the above

f. A device has two IP addresses. One address is 192.123.46.219. The other address could be _____.

   (A) 192.123.46.220   (B) 192.123.46.0
   (C) 192.123.47.219   (D) any of the above

g. Using the limited broadcast address, a _____ sends a packet to _____. on the network.

(A) Host; all other hosts   **(B)** Router; all other hosts
(C) Host; a specific host   **(D)** Host; itself.

h. Which timer schedules the sending out of regular update messages?

(A) Periodic   **(B)** expiration
(C) Garbage collection   **(D)** both **(B)** and **(C)**

i. Which type of BGP message announces a route to a new destination?

(A) Open   **(B)** Update
(C) Keep alive   **(D)** Notification

j. MIME is used in _____ protocol

(A) SNMP   **(B)** HTTP
(C) SMTP   **(D)** E-mail

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

Q.2 a. What are the issues for designing OSI layers? What are the principles that were applied to arrive at the seven layers in OSI model?   **(6)**

  b. Five signal sources are multiplexed using TDM. Each source produces 100 characters per second. Assure that there is byte interleaving and that each frame requires 1 bit for synchronization. What is the frame rate? What is the bit rate on the path?   **(5)**

  c. Explain how connection is done over public circuit switched network.   **(5)**

Q.3 a. What is piggybacking? Discuss the size of the Go-Back-N ARQ sliding window at both the sender site and the receiver site.   **(4)**

  b. ACK 7 has been received by the sender in a Go-Back-N sliding window system. Now frames 7,0,1,2 and 3 are sent. For each of the following separate scenarios, discuss the significance of the receiving of:
  (i) ACK1
  (ii) ACK4
  (iii) ACK3   **(6)**

  c. Write short notes on:

    (i) Point–to–Point Protocol.
    (ii) HDLC Protocol.

  Discuss their frame formats also.   **(6)**

Q.4 a. Explain LAN Bridges. Give the frame format for IEEE 802.11 standard.   **(6)**

  b. Explain the differences between:

(i) Pure ALOHA and slotted ALOHA.
(ii) Persistent and Non-Persistent CSMA.   **(6)**

c. Explain FDDI and its frame format.   **(4)**

Q.5   a.   Explain external and internal operations in virtual circuits and datagrams with the help of proper examples and diagrams.   **(9)**

b. Compare the following:
(i)   Source routing verses hop-by-hop routing
(ii) Link state routing verses Distance-vector routing   **(7)**

Q.6   a.   Are both UDP and IP unreliable to the same degree? Justify your answer.   **(3)**

b. Explain Quality of Service parameters for ATM networks.   **(6)**

c. Does RPB in multicast routing actually create a spanning tree? Explain. What are the leaves of the tree?
(2)

d. Write short notes for the following:

(i) B-ISDN
(ii) ATM.   **(5)**

Q.7   a.   Explain TCP/IP architecture and its features.   **(6)**

b. Compare active attacks and passive attacks in network security. Give an example for each.
(6)

c. Explain features of SNMP.   **(4)**

Q.8   a.   Explain the Border Gateway routing protocol.   **(4)**

b. Compare IPv6 and IPv4. Give migration issues from IPv4 to IPv6.   **(6)**

c. Explain the operation of HTTP application protocol. Mention any two request messages and response messages.   **(4+2)**

Q.9   a.   RSVP signaling is different from ATM signaling. Discuss the differences and list advantages and disadvantages of each protocol.   **(6)**

b. Explain features of differentiated services? Explain session control protocols.   **(6)**
c. Explain the following:
(i) Authentication. (ii) Encryption.   **(4)**