ROLL NO. _____

Code: AE28 **Subject: COMPUTER NETWORKS**

AMIETE – ET (OLD SCHEME)

Time: 3 Hours **OCTOBER 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 the best alternative in the following: (2×10)

a. Which level of the TCP/IP reference model routes data/information across a network channel?

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

b. Identify the statement which best describes TCP and UDP.

(A) TCP is a connection oriented Protocol whiles UDP is a datagram service
(B) TCP is a protocol for the Network Layer of the OSI
(C) UDP and TCP could be used interchangeably
(D) TCP is an advanced protocol whiles UDP is a single protocol

c. What does the terminology ATM mean?

(A) Automatic transfer mode **(B)** Automatic translation mode
(C) Asynchronous transfer mode **(D)** Asynchronous transformation mode

d. Which of the following standards apply to logical link control?

(A) IEEE 802.3 **(B)** IEEE 802.2
(C) IEEE 802.5 **(D)** IEEE 802.4

e. Flooding in networks and data communication has certain properties. Which of the options below is a property of flooding?

(A) All possible routes are tried **(B)** All paths are loaded
(C) All nodes are linked **(D)** Can not be used to set up virtual circuit

f. Which of the following statement is true about an IP address?

(A) IP address is based on your computer network card
(B) IP address is issued by a computer vendor
(C) IP address is a Transport Protocol
(D) IP address is not used on the internet

g. Which of these protocols does not guarantee delivery, preservation of sequence or protection against duplication

(A) HTTP **(B)** FTP
(C) UDP **(D)** SMTP

h. Which of the following is not a characteristic of the OSI model

(A) Each layer performs a subset of the required communication functions
(B) Each layer does not rely on the next lower layer to perform more primitive functions
(C) Each layer provides services to the next higher layer
(D) Changes in one layer should not require changes in other layers

i. Identify any of the following statements which truly describes a virtual circuit.

(A) Packets are forwarded more quickly and no routing decisions
(B) More reliable in functionality
(C) Call set up phases are present
(D) Packets are centralised at random and more routing decisions are made

j. Which of the following is not a routing strategy?

(A) Fixed routing **(B)** Adaptive routing
(C) Random routing **(D)** Float routing

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

Q.2 a. List the five key differences between TCP reference model and OSI reference model. **(5)**

b. Describe the characteristics and application or the following network devices:
(i) Routers
(ii) Bridges
(iii) Switches **(9)**

c. Why do HTTP, FTP and SMTP run on the top of TCP rather, than UDP? **(2)**

Q.3 a. What is the basic purpose of MAC layer protocol? Explain the function of following MAC layer protocols:
(i) Ethernet
(ii) Token bus **(6)**

b. Define multiplexing. Discuss the need for multiplexing in networked system. **(4)**

c. Explain the terms: ADSL and DSL **(6)**

Q.4 a. How is the flow control at the transport layer different from data link layer? Discuss. **(6)**

b. Give the functionality of ARP and RARP with examples. **(4)**

c. Explain the functionality and features of
(i) RSVP
(ii) ARQ **(6)**

Q.5 a. Let a system use 9600 bps channel for sending call setup request to a base station. Suppose that packets are 120 bits long, that the time-out is 20 ms. what is maximum throughout possible with Aloha and with Slotted Aloha? **(6)**

b. Explain Source Routing Bridges. **(6)**

c. Briefly explain Hop by Hop and End to End approaches. **(4)**

Q.6 a. Explain the following switching techniques:
(i) Datagram approach
(ii) Virtual circuit approach **(8)**

b. Explain the basics of queuing system with the help of queuing model. **(4)**

c. Mention various HDLC configurations and transfer modes. **(4)**

Q.7 a. With reference to the transport layer, outline the connection set - up operation of 3 - way handshaking through a diagram. What are its advantages? **(6)**

b. Differentiate between IPv4 and IPv6. **(4)**

c. Write short notes on:
(i) Mobile IP
(ii) DHCP **(6)**

Q.8 a. Draw and explain the structure of an ATM cell. **(4)**

b. List and briefly define the ATM service categories. **(6)**

c. Explain the basic services of ISDN. Describe five applications of ISDN. **(6)**

Q.9 a. Explain session controlled protocols. Give examples. **(6)**

b. Explain a scheme of generation of digital signature. **(6)**

c. Give relevance, features and structures of MIME and SMTP. **(4)**