ROLL NO. _____

Code: AE71/AC67/AT67 Subject: DATA COMM. & COMPUTER NETWORKS

AMIETE – ET/CS/IT

Time: 3 Hours **JUNE 2013** **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:

a. Which organisation defines standards for telecommunication?

(A) ITU **(B)** IEEE
(C) EIA **(D)** ISO

b. Which of the following is not associated with the session layer?

(A) Control of dialogue between applications
(B) Dialogue discipline
(C) Data compression
(D) Synchronization

c. Choose the layer responsible for synchronization and dialogue control between networks:

(A) Network **(B)** Transport
(C) Session **(D)** Data-link

d. Which of these devices is responsible for the connection of Local Area Networks with Wide Area Networks?

(A) Hub **(B)** Bridge
(C) Data switch **(D)** Gateway

e. Which of these domains is restricted to qualified organizations?

(A) .com **(B)** .org
(C) .net **(D)** .edu

ROLL NO. _____

f. The following is true for SMTP:

(A) Transfer mail between hosts in TCP/IP Suite and defined by RFC 821
(B) Transfer mail between hosts in OSI Suite and undefined
(C) Transfer mail between hosts
(D) None of these

g. There are three types of Hubs that exist. Which of the following options correctly describes these three?

(A) Passive, dormant, special **(B)** Active, dormant, passive
(C) Passive, Active, Turbo **(D)** Passive, Active, Intelligent

h. Which of the following network topologies among the list below is incorrect?

(A) Star **(B)** Internet
(C) Ring **(D)** Bus

i. What does the terminology ISDN mean?

(A) Internal Digital Services Network
(B) Integrated Systems Digital Network
(C) Integrated Services Digital Naming System
(D) Integrated Services Digital Network

j. Which of the following statements is true about standards?

(A) Standards create additional cost
(B) Standards help individuals users to increase effectiveness
(C) Standards allow products from multiple vendors to communicate
(D) Standards cannot freeze technology

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

Q.2 a. Explain the functioning layers in OSI model. Mention the necessity of using layer concept in OSI model. **(4+2)**

b. Define the following:-
(i) Bandwidth (ii) Channel capacity
(iii) Multiplexing (iv) LAN **(4)**

c. Give the applications of TCP/IP. Mention any 3 protocols that operate in
(i) TCP (ii) I/P **(3+3)**

Q.3 a. Compare the following:
(i) Twisted pair (ii) Coaxial pair
(iii) Optical fiber **(6)**

b. Explain the following transmission impairments and mention how it affects the Communication System:-
(i) Attenuation (ii) Delay distortion
(iii) Noise **(6)**

c. Define Nyquist bandwidth and Shannon's Capacity. Give their equations. **(4)**

Q.4 a. Discuss any two methods to transform analog data to digital signal with a block diagram. **(6)**

b. Give an example of CRC method in error detection. **(5)**

c. Compare synchronous and asynchronous transmission. Give their respective applications. **(5)**

Q.5 a. Explain the role of flow control and error control in data link protocols. **(5)**

b. Explain the HDLC Frame format with a diagram. **(6)**

c. How is statistical TDM different from Synchronous TDM? Explain. **(5)**

Q.6 a. Define Choke packet. Explain implicit Congestion Signalling and explicit Congestion Signalling in Congestion control. **(2+4)**

b. Mention routing parameters in packet switching networks. Mention features of adaptive routing. . **(4+2)**

c. Compare Circuit Switched networks and Packet Switched networks. **(4)**

Q.7 a. Explain LAN Protocol architecture. Mention LLC Services. **(4+2)**

b. Draw IEEE 802.3 frame format used in Ethernet. Mention the features of each field. **(4)**

c. Draw the architecture of IEEE 802.11 and explain its services. **(3+3)**

Q.8 a. Draw the IP address formats for Class A to Class E. **(5)**

b. Draw IPv6 header format and explain its fields. **(6)**

c. Explain the working of IP (Internet Protocol). **(5)**

Q.9 a. Describe and compare the following routing algorithms: **(6)**
(i) Open Shortest Path First (OSPF)
(ii) Border Gateway Protocol

b. Give a short note on DNS and explain its working. **(5)**

c. Differentiate between TCP and UDP. **(5)**