

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

- 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

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

**Each question carries 16 marks.**

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- 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)