Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(ECE-N)/SEM-8/EC-804A/2010

2010

INTERNET TECHNOLOGY

Time Allotted : 3 Hours | **Full Marks : 70**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) Which network address belongs to Group A ?

   a) 188.255.1.0 b) 125.1.0.0

   c) 200.255.222.0 d) 250.250.250.0

   ii) A subnet mask in class *A* has hourteen 1's. How many subnets does it define ?

   a) 32 b) 64

   c) 8 d) 128.

   iii) The ..... layer changes bits into electromagnetic signals.

   a) Physical b) Data Link

   c) Transport d) None of these.

iv) The ..... layer lies in betwen network layer and application layer.

a) Physical b) Data Link

c) Transport d) None of these.

v) Which routing algorithm requires more traffic between routers for set-up and updating ?

a) Distance vector b) Link state

c) Dijkstra d) Vector link.

vi) The ..... is the physical path over which a message travels.

a) Protocol b) Signal

c) Medium d) All of these.

vii) ..... is a dynamic mapping protocol in which a physical address is found for a given IP address.

a) ARP b) RARP

c) ICMP d) None of these.

viii) UDP is

a) Connecton-oriented b) Connection-less

c) both (a) & (b) d) none of these.

ix) The maximum size of TCP header is

a) 64 Byte b) 16 Byte

c) 60 Byte d) 2^{16} Byte.

x) In computer network, Loadshedding is a terminology associated with

a) Quality of service

b) Process to Process delivery

c) Congestion control

d) Sudden failure of network.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Why do we need an IP address ? Explain each class of Class-full IP address with their mask information. 2 + 3

3. Explain the ARP frame format. What is the size of an ARP packet when the protocol is IP and the hardware is Ethernet ? 4 + 1

4. What is ISDN ? Draw and explain the B-ISDN functional architecture. 1 + 4

5. What is the drawback of BOOTP ? Explain how DHCP works. 1 + 4

6. What is slow convergence problem ? How can it be overcome ? 2 + 3

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) An organization granted a block of addresses with the beginning address 14.24.74.0/24. There are 256 addresses in this block. The organization needs to have 11 subnets. 2 subnets each have 64 addresses, 2 subnets each have 32 Addresses, 3 subnets each have 16 addresses, 4 subnets each have 4 addresses. Design the Subnets.

   b) Why is IP called 'Best effort delivery' protocol ? Draw IP datagram and explain the fragmentation offset field.

   c) What is Multicast Addressign ? Describe the working principle of transport gateway ? 4 + (2 + 4) + (2 + 3)

8. a) A host with IP address 137.23.56.23/16 sends a packet to a host with IP address 137.23.67.9/16. Is the delivery direct or indirect ? Assume no subnetting.

   b) TCP opens a connection using an initial sequence number (ISN) 14,454. The other party opens the connection with an ISN of 21,732. Show the three TCP segments during the connection establishment.

   c) Explain the OSPF database description message format with diagram.

   d) When does the DHCP server need to check the static database for address mapping ? What are the types of information can a client receive from a DHCP server when it is booted for the first time in network ?

   2 + 4 + 4 + (2 + 3)

9. a) Compare split horizons and poison reverse. When would one be used in preference to the other ?

   b) Explain how IP and mask are encoded in BGP message format.

   c) Explain how Gateway to Gateway Protocol (GGP) truly follow Bellman-Ford routing protocol.

   d) How delay metric of HELLO protocol is responsible for oscillation problem ? What are the corresponding fixes ? (2 + 2) + 2 + 4 + (2 + 3)

10. a) Describe the concept of virtual connection ?

    b) The ATM standard defines how many layers ? Briefly explain each of them.

    c) What are the techniques have been used by VPN to guarantee privacy for an organization ? Briefly explain each of them.

    d) What is firewall ? Discuss each types of firewall briefly.

    2 + (1 + 3) + (1 + 4) + (1 + 3)

11. Write brief notes on any *three* of the following : 3 × 5

    a) ATM LAN

    b) Telnet

    c) Frame Relay

    d) SSL

    e) Core Routers.