

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 × 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 fourteen 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. |

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GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

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. $3 \times 15 = 45$

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 ? $4 + (2 + 4) + (2 + 3)$

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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.