Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH (IT)/SEM-7/IT-701/2009-10

2009

INTERNETWORKING

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 of the following : 10 × 1 = 10

   i) Frame Relay operates in the
      a) physical layer
      b) data link layer
      c) physical and data link layers
      d) phhysical, data link, and network layers.

   ii) What is the supernet mask for a supernet composed of 16 class C address ?
      a) 255.255.240.16 b) 255.255.16.0
      c) 255.255.248.0 d) 255.255.240.0.

   iii) An organization is granted a block of classless address with the starting address 199.34.32.0./27. How many address are granted ?
      a) 8 b) 16
      c) 32 d) 64.

   iv) A WAN using the OSPF protocol that connects two routers is an example of a ..... type of OSPF network.
      a) point-to-point b) transient
      c) stub d) virtual.

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v) BGP is based on
   a) distance vector routing
   b) link state routing
   c) path vector routing
   d) both (a) and (b).

vi) Which layer in ATM protocol has a 53 byte cell as an end product ?
   a) Physical b) ATM
   c) Application adaptation d) Cell transformation.

vii) The position of SSL in TCP/IP model is in between
   a) physical and data link layer
   b) transport and application layer
   c) network and data link layer
   d) network and transport layer.

viii) Which of the following OSI layers is responsible for identifying communications partners ?
   a) Application b) Session
   c) Network d) Presentation.

ix) What is a router ?
   a) A hardware device that connects dissimilar networks, such as Cat 5 cabling and FDDI.
   b) A network host that reads the source and destination addresses in the packet header and makes decisions about where to forward the packet.
   c) A network host that can forward LAN-based e-mail messages onto the Internet, after repackaging them into the SMTP format.
   d) A software system that can translate betwen dissimilar networks such as Ethernet and Token Ring.

x) What is the maximum speed of 10 Base 5 Ethernet cable ?
   a) 5 kbps b) 5 mbps
   c) 10 kbps d) 10 mbps.

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GROUP – B

(Short Answer Type Questions)

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

2. Describe the link state routing algorithm and also state the advantages of link state routing algorithm ? 4 + 1
3. What is firewall ? Discuss each type of firewall briefly. 1 + 4
4. a) What is subnetting ?
   b) A router inside the organization receives a packet with destination address 190.240.33.91. Show how it finds the sub-network address to route the packet.
   c) What is classless addressing ? 2 + 2 + 1
5. Write a short note on ARP and RARP. $2\frac{1}{2} + 2\frac{1}{2}$
6. What do you mean by IP datagram ? Explain IP datagram format. 1 + 4

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is the difference between subnetting and supernetting ?
   b) An ISP is granted a block of address starting with 150.80.0.0/16. The ISP wants to distribute these blocks to customers as follows :
      i) The first group has 200 medium-size businesses, each needs 128 addresses.
      ii) The second group has 400 small businesses, each needs 16 addresses.
      iii) The third group has 2048 households, each needs 4 addresses.

      Design the sub-blocks and give the slash notation for each sub-block. Find out how many addresses are still available after this allocations.
   c) Is the size of the ARP packet fixed ? Explain.
   d) A diskless host with an Ethernet physical address 9845234F67CD has been booted. Show the entries in the RARP packet sent by the host.
   e) Describe the working principle Transport Gateways. 2 + 5 + 2 + 4 + 2

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8. a) Describe the characteristics of BGP.

   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) Compare and contrast the DNS structure with the UNIX directory structure.

   d) What is the size of question record containing and IP address ?

   e) 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 ?

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

9. a) What is Inernetworking ? What are the basic needs for an Internet ?

   b) Discuss different types of services provided by the Internet.

   c) Briefly describe the archhitecture of an ATM network.

   5 + 5 + 5

10. What is DHCP ? What are the different types of messages are there ? Explain DHCP message format. Explain the lease renewal process. What are interior routing and exterio routing ? 2 + 2 + 3 + 4 + 4

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

    a) BGP

    b) MAC address

    c) E-mail

    d) FDDI

    e) Protocol Layering

    f) VPN.

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