DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY

B.TECH. SEMESTER IV [Information Technology]

SUBJECT: (IT 407) Computer And Communication Network

Examination	**: Second Sessional**	**Seat No.**	**:**
Date	**: 19/02/2016**	**Day**	**: Friday**
Time	**: 11.00 To 12.15 PM**	**Max. Marks**	**: 36**

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed. **[12]**

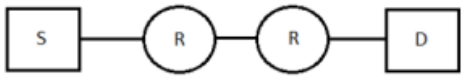
(a) Departmental router(R) is connected with three labs with ip block **[02]**

1. 192.168.12.0/25
2. 192.168.12.128/26
3. 192.168.12.192/26

Draw the router(R) tables before super netting and after super netting

(b) Explain Binary count down algorithm with example. **[02]**

(c) Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet has to visit the network layer and the data link layer during a transmission from S to D. **[02]**



(A) Network layer – 4 times and Data link layer – 4 times
(B) Network layer – 4 times and Data link layer – 3 times
(C) Network layer – 4 times and Data link layer – 6 times
(D) Network layer – 2 times and Data link layer – 6 times

(d) For which one of the following reasons does Internet Protocol (IP) use the time to-live (TTL) field in the IP datagram header **[02]**

(A) Ensure packets reach destination within that time
(B) Discard packets that reach later than that time
(C) Prevent packets from looping infinitely
(D) Limit the time for which a packet gets queued in intermediate routers.

(e) An IPv4 datagram has arrived with the following information **in** the header (in hexadecimal): **[02]**

Ox45 00 00 54 00 03 58 50 20 06 00 00 7C 4E 03 02 B4 OE OF 02

Find the checksum value of this IPv4 header.

(f) Which one of the following is TRUE interior Gateway routing protocols – Routing Information Protocol (RIP) and Open Shortest Path First (OSPF) **[02]**

(A) RIP uses distance vector routing and OSPF uses link state routing
(B) OSPF uses distance vector routing and RIP uses link state routing
(C) Both RIP and OSPF use link state routing
(D) Both RIP and OSPF use distance vector routing

Q.2 Attempt Any Two of following questions. **[12]**

(a) Consider the following routing table of a router. **[06]**

Destination Network	Next hop
192.24.0.0 / 18	D
192.24.12.0 /22	B

Find the next hop for the following four IP addresses.
Clearly show the calculations.

1. 192.24.6.0
2. 192.24.14.32
3. 192.24.54.0
4. 192.26.12.0

(b) Explain two node and three node instability in distance vector routing. **[06]**

(c) What is network address translator (NAT)? Explain the working of NAT with suitable figure. **[06]**

Q.3 Attempt following questions **[12]**

(a) What is the importance of ARP? Discuss the various cases in detail, where ARP is useful in network. **[06]**

(b) A large number of consecutive IP addresses are available starting at 198.16.0.0. Suppose that four organizations, *A*, *B*, *C*, and *D*, request 4000, 2000, 4000, and 8000 addresses, respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in the *w.x.y.z/s* notation. **[06]**

OR

Q.3 Attempt following questions **[12]**

(a) In an IPv4 datagram, the M bit is 0, the value of HLEN is 10, the value of total length is 400 and the fragment offset value is 300. Find the position of the datagram, the sequence numbers of the first and the last bytes of the payload. **[03]**

(b) In the network 200.10.11.144/27, the first and last IP address of the network which can be assigned to a host is_____and _____. Find the total number of IP addresses in this block. **[03]**

(c) Explain link state routing algorithm with example. **[06]**