

Seat
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मन - 042

Computer Network (1030)

P. Pages : 3

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** question from each unit.
5. Use of non-programmable calculator is allowed.
6. Draw neat diagram wherever necessary.
7. Answer to the questions must be precise & to the point.

UNIT - I

1. Explain Data link layer design issues in brief. 10
2. a) Give comparison between Go-Back-N and selective repeat protocol. 5
b) Explain Elementary Data link layer protocols. 5
3. The following character encoding is used in Data link protocol. A : 01000111;
B:11100011;
FLAG : 01111110; ESC : 11100000
Show the bit sequence transmitted (in binary) for the four-character frame :
A B ESC FLAG when each of the following framing methods are used :
a) Character count.
b) Flag bytes with byte stuffing.
c) Starting and ending flag bytes, with bit stuffing.
d) Explain any one framing method from above. 10

UNIT - II

4. Explain with neat diagram the IPV₄ to IPV₆ transition strategies. 10
5. An ISP has allocated the block with starting address 194.24.0.0/19. The administrator wants to divide this into following group.
a) First group needs 2048 addresses.
b) Second group needs 1024 addresses.
c) Third group needs 1024 addresses.
d) Fourth group needs 4096 addresses.
Design subblocks and give slash notations to each group and find out the available addresses after this allocation. 10

6. a) Draw the datagram formats of IPV_4 and IPV_6 . 5
- b) Define fragmentation and explain why the IPV_4 and IPV_6 protocols need to fragment some packets. Is there any difference between the two protocols in this matter ? 5

UNIT - III

7. Explain with neat diagram the operation, packet format and four cases of ARP. **10**
8. What are the types of error messages in ICMP Briefly explain each of them. **10**
9. a) A router has the following (CIDR) entries in it's routing table.

Address / Mask	Next hop
135.46.56.0/22	Interface 0
135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
Default	Router 2

For each of the following IP addresses, what does the router do if a packet with that address arrives ?

- a) 135.46.63.10 b) 135.46.57.14
c) 135.46.52.2 d) 192.53.40.7
e) 192.53.56.7

- b) How many multicast addresses can be supported for the IPv₄ protocol in ethernet ? How many multicast addresses can be supported for the IPv₄ protocol ? What is the size of address space lost when we transform a multicast IPv₄ address to on ethernet multicast address ?

UNIT - IV

10. Find the topology of the network, if following is the routing table for router R1.

Mask	Network Address	Next hop	Interface
126	180.70.65.192	---	m2
125	180.70.65.128	---	m0
124	201.4.22.0	---	m3
122	201.4.16.0	---	m1
Any	Any	180.70.65.200	m2

11. a) Explain Link state routing. 5
b) Explain source based tree and group shared tree approach in multicasting. 5
12. a) Explain e-BGP and i-BGP. 5
b) Explain process-to-process delivery with neat diagram. 5

UNIT - V

13. Explain with neat diagram, the format of TCP segment. 10
14. What are the four techniques to improve QoS ? Explain Leaky bucket technique in detail. 10
15. Explain all the techniques of prevention and removal congestion control. 10
