TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2080 Baishakh

Exam.	Back		
Level	BE	Full Marks	80
Programme	BEI	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Computer Network *(CT 613)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. What is data encapsulation? Explain OSI reference model with suitable diagram. [2+6]
2. Define Throughput and Delay. Compare different types of guided transmission media with appropriate figures. [2+6]
3. Explain Selective repeat and Go back N ARQ with example. A bit string 01101110111111111011111110 needs to be transmitted with flag 7E at the data link layer. What is the string actually transmitted after bit stuffing? [6+2]
4. Why are different inter-AS and intra-AS protocols used in the internet? Compare and contrast link state and distance vector routing algorithms. [2+6]
5. Design a network for a company having 5 departments with 60, 42,30,10 and 12 hosts. Specify the network address, valid host range, broadcast address and subnet mask for each department from the given address 202.17.11.0/24. [10]
6. What are the differences between TCP and UDP? How do you implement packet congestion Control for better QOS? [4+4]
7. What is port address and socket address? Explain working principle of E-mail system with a proper diagram. [2+6]
8. What are the features of IPv6 header. Explain the strategies used for transition from IPv4 to IPv6. [3+5]
9. When can you say your network is compromised? And, how is it caused? How can you make your network secure using public key cryptography? [2+2+4]
10. Write short notes on: (Any Two) [2×3]
    a) X25 Network
    b) DHCP
    c) ALOHA

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2079 Bhadra

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Year / Part	III / I	**Time**	3 hrs.

Subject: - Computer Network *(CT 613)*

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1. Why layering is important? Explain Open System Interconnection (OSI) model and compare OSI with TCP/IP reference model. [2+6]
2. What are the factors to be considered while selecting media? Differentiate between datagram switching and virtual circuit switching approach. [2+6]
3. What are the services provided by data link layer? How does CSMA/CA protocol work to avoid the collision during hidden station problem? Explain with diagram. [2+4+2]
4. Suppose an ISP has 200, 250, 500 and 100 customers in the four different places say, A, B, C and D and need four point-to-point links. Provided an IP 10.0.48.0/21, you are required to perform subnetting with minimum waste of IP. Find out the subnet masks, network address, broadcast address, usable IP range and unusable IP range for each location. [10]
5. Define unicast and multicast routing. Compare distance vector and link state routing protocols with example. [2+6]
6. What is significance of port address? Discuss about different classes of port addresses defined by IANA. How can traffic congestion controlled by token Bucket method? [1+3+4]
7. What is DNS? Explain the working principle of DNS with a proper diagram. Compare IMAP and POP3 protocols. [1+4+3]
8. What are the factors that lead to the deployment of IPv6? Explain briefly about the process involved in transition of IPv4 to IPv6. [2+6]
9. What are the properties of secure communication? Encrypt and decrypt the message "BEIE" using RSA algorithm. [2+6]
10. Write short notes on: (Any Two) [2×3]
    a) Go back N ARQ
    b) Virtual circuit switching
    c) CRC

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