

# POKHARA UNIVERSITY

Level: Bachelor  
Programme: BE  
Course: Computer Networks (New)

Semester: Spring

Year : 2025  
Full Marks : 100  
Pass Marks : 45  
Time : 3 hrs.

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Attempt all the questions.*

1. a) Define Computer Network. Explain about Network Architecture. Discuss the criteria necessary for an effective and efficient network? 8
- b) Define protocol, stack and interface? Explain about protocol hierarchies in detail? 7
2. a) What is Transmission media. How ISDN interfaces and channel works? 7
- b) What is packet switching? How is this different from other switching techniques? 8
3. a) What is flow control? Explain different types of flow control mechanism. 7
- b) Illustrate checksum method for error control with an example. 8

**OR**

How does collision avoided during channel access? Mention the algorithm of CSMA/CD in detail.

4. a) Imagine yourself as a skillful computer network administrator. Given an IP address of 192.168.1. 0 / 25, your responsibility is to create four subnetworks for four departments namely A, B, C, D that require 99, 55, 29 and 13 hosts respectively. Find out the subnetwork address, broadcast address, and ranges of host addresses, subnetwork masks and wildcard masks for each department. 7
- b) Compare the header format of Internet Protocol version 4 (IPv4) with IPv6 and explain each fields in short. 8

**OR**

Write down the differences between adaptive and non-adaptive routing. Draw the scenario and explain Routing Information Protocol (RIP) with an example.



5. a) Explain the concept of socket programming in the transport layer protocol. 8
- b) What is congestion in a network? Compare between leaky bucket and token bucket algorithm with the operation how token bucket works. 7
6. a) What are DNS servers. Explain HTTP, FTP & proxy server. 8
- b) What do you mean by cryptography? Explain with algorithm Public vs Private Key Cryptography. 7
7. Write short notes on: (Any two) 2×5
- a) Firewall and digital certificate
- b) 4G Vs 5G
- c) Networking Hardware