

POKHARA UNIVERSITY

Level: Bachelor

Semester: Spring

Year : 2025

Programme: BE

Full Marks : 100

Course: Computer Networks (New)

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 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