



**PAC INSTITUTE OF TECHNOLOGY AND SOCIAL STUDIES
JAN – APRIL 2025 ASSESSMENT**

FORMATIVE ASSESSMENT

Qualification / Course : **COMPUTER SCIENCE LEVEL 6**

Unit of Competency : **UNDERSTAND NETWORKING AND DISTRIBUTED SYSTEMS**

**WRITTEN ASSESSMENT
TIME: 3 HOURS**

INSTRUCTIONS TO THE CANDIDATE:

- 1. Read all the instructions carefully before attempting the questions.*
- 2. This paper consists of two sections, A & B.*
- 3. You are allowed 3 Hours to Answer the questions.*
- 4. Marks for each question are indicated in brackets.*
- 5. Write your responses in the Separate Answer booklet provided.*
- 6. Do not write anything on this question paper.*

SECTION A: (40 MARKS)

Answer ALL the questions in this section

1. Define networking and explain **TWO** benefits of networking in an organization.

(3

Marks)

2. Differentiate between wired and wireless transmission media, giving one example of each. (3 Marks)

3. List **THREE** types of network topologies and briefly describe each. (3 Marks)

4. Explain the concept of a distributed system and give **TWO** advantages of using distributed systems. (3 Marks)

5. Define the following networking terms:

a) Network node

b) Bandwidth

c) Packet switching (3 Marks)

6. Explain the **DIFFERENCE** between a LAN and a WAN, and provide an example for each. (3 Marks)

7. Network security is crucial in preventing cyber threats. Identify **TWO** types of network attacks and describe their impact. (4 Marks)

8. Define IP addressing and differentiate between **public and private IP addresses**.

(4

Marks)

9. Explain **THREE** benefits of using firewalls in securing a network. (4 Marks)

10. Describe **THREE** key troubleshooting tools used in diagnosing network issues.

(4

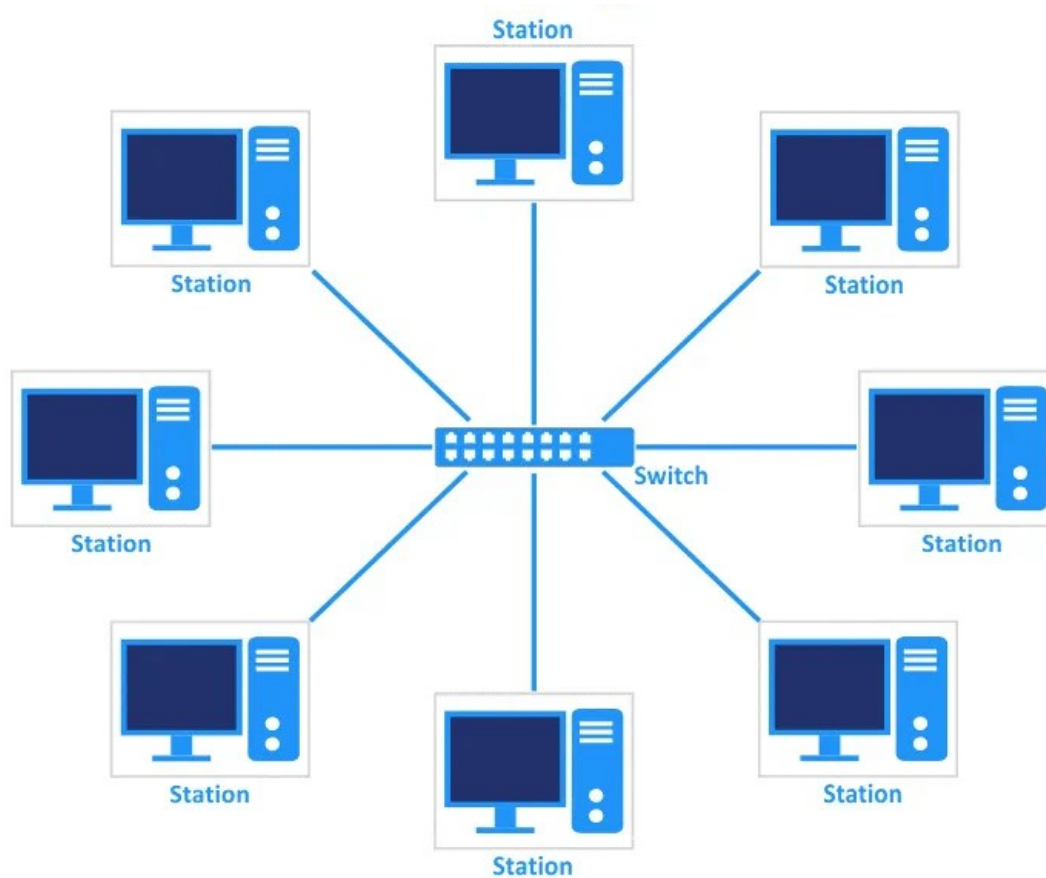
Marks)

SECTION B: (60 MARKS)

*Answer any **THREE (3)** questions from this section*

QUESTION 11:

The diagram below represents a distributed network system setup for a company.



a) Identify the type of network topology used in the diagram and justify your answer

(5

Marks)

b) Explain **THREE** advantages and **TWO** disadvantages of using this topology in a distributed system.

(5 Marks)

c) If one node in the diagram fails, describe **THREE** possible solutions to ensure continuous network operation. (10 Marks)

QUESTION 12:

a) Explain the **OSI Model** and describe the function of each of its seven layers. (10 Marks)
b) Discuss **FIVE** types of network devices and explain their roles in network communication. (10 Marks)

QUESTION 13:

John was hired as a network administrator at Tech Solutions Ltd. The company was experiencing frequent downtime and slow internet speeds across its branches. After a network audit, John discovered that most of the employees were using outdated network cables and that the company lacked proper network security measures.

a) Identify **THREE** possible causes of the slow internet speeds and suggest solutions. (6 Marks)

b) Describe **THREE** security measures John should implement to protect the company's network. (6 Marks)

c) If Tech Solutions Ltd. plans to expand to multiple locations, what **FOUR** factors should John consider when setting up a distributed network? (8 Marks)

QUESTION 14:

a) Define IP Addressing and explain the differences between **Class A, Class B, and Class C** IP addresses. (6 Marks)

b) Describe the role of subnetting in network design and illustrate how a Class C network can be divided into four subnets. (6 Marks)

c) A company wants to set up a new network in a distributed environment. Discuss **FOUR** key considerations when designing this network. (8 Marks)