



PAC INSTITUTE OF TECHNOLOGY AND SOCIAL STUDIES MAY – AUGUST 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. File transfer protocol (ftp) is a standard internet protocol for transmitting files between computers on the internet over TCP/IP connections, explain how it works [3 marks]
2. Network topology is the arrangement of the elements of a communication network List the **FOUR** basic types of topologies. [4marks]
3. During class discussion, student came across the following types of cables Twisted-pair cable, Coaxial cable Fiber-optic cable and Wireless:

What are their meanings?

- i. Twisted-pair cable [1marks]
 - ii. Coaxial cable [1marks]
 - iii. Fiber-optic [1marks]
 - iv. Wireless [1marks]
4. Computer Networks form a great part in our day-to-day life outline any **FIVE** importance of computer networks
[5 marks]
 5. Client/Server network is a network model designed for the end users called clients, to access the resources such as songs, video, etc. from a central computer known as Server? using a simple diagram explain how it works
[4 marks]
 6. What is subnetting, explain **TWO** reasons for subnetting [4 marks]
 7. Network Security is the process of taking physical and software preventative measures to protect the underlying networking infrastructure from unauthorized access, misuse, malfunction, modification, destruction, or improper disclosure. explain the following in relation to network security
 - a. Firewall [2 marks]
 - b. Internal Threat [2 marks]
 8. Network monitoring is one of the aspects of Network performance. Explain the following in relation to network monitoring
 - a. Ping [2 marks]
 - b. Traceroute [2 marks]
 9. A computer network can be categorized by their size. A computer network is

mainly of **FOUR** types, list and explain them

[4 Marks]

10. What is network performance test? List the steps involved in network testing.

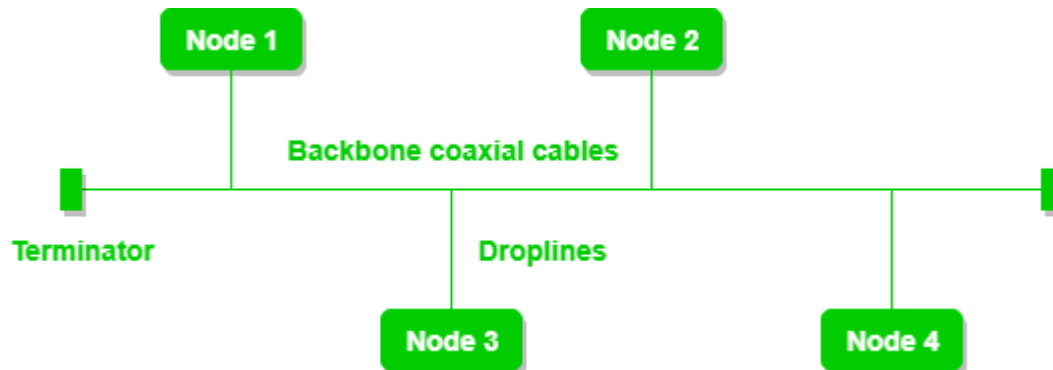
[6 marks]

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)