

**UNIVERSITY COLLEGE TATI (UC TATI)****FINAL EXAMINATION QUESTION BOOKLET**

COURSE CODE : DNT 1014  
COURSE : INTRODUCTION TO NETWORKS  
SEMESTER/SESSION : 1 – 2022/2023  
DURATION : 3 HOURS

**Instructions:**

1. This booklet contains 5 questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise your hands and ask the invigilator.

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO**

**THIS BOOKLET CONTAINS 5 PRINTED PAGES INCLUDING COVER PAGE**

INTRODUCTION TO NETWORKS (DNT 1014)

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**QUESTION 1**

- a) State **FIVE (5)** intermediary devices. (5 marks)
- b) Discuss **FIVE (5)** networking technologies today. (10 marks)

**QUESTION 2**

- a) Explain the process of communication with diagram included the seven layers of OSI. (5 marks)
- b) Illustrate the frame process in layer 2.
- c) Read the scenario: As an Internet user you have many choices in subscribing the package of internet. Now, there are many ISP offer their product to consumer. As an internet user you need to make a comparison study to get the best choice. Thus, you need to study any ISP and do the following task: (4 marks)
- i. Explain the ISP chosen. (2 marks)
  - ii. Benefits of ISP choose. (2 marks)
  - iii. Bills per month. (2 marks)
  - iv. Devices involved with model with cost. (4 marks)
  - v. Sketch the topology to show the connection between devices. (4 marks)

## INTRODUCTION TO NETWORKS (DNT 1014)

## QUESTION 3

a) Solve the subnetting according to the IP address given below.

(10 marks)

Table 1: IP subnetting

<b>Host IP Address</b>	<b>172.30.0.33 /16</b>
Major Network Mask	
Major (Base) Network Address	
Major Network Broadcast Address	
Total Number of Host Bits	
Number of Hosts	
<b>Subnet Mask</b>	<b>255.255.255.0</b>
Number of Subnet Bits	
Number of Usable Subnets (zero subnet used)	
Number of Host Bits per Subnet	
Number of Usable Hosts per Subnet	
Subnet Address for this IP Address	
IP Address of First Host on this Subnet	
IP Address of Last Host on this Subnet	
Broadcast Address for this Subnet	

INTRODUCTION TO NETWORKS (DNT 1014)

- b) Determine the network and broadcast addresses and number of host bits and hosts for the given IPv4 addresses and prefixes in the following table. (12 marks)

Table 2: Network Address Table

IPv4 Address/Prefix	Network Address	Broadcast Address	Total Number of Host Bits	Total Number of Hosts
192.168.100.25/28				
172.30.10.130/30				
10.1.113.75/19				

- c) Use the 192.168.10.0/24 network address to provide addresses to the network devices on Figure 1. Also provide an IP address scheme that will accommodate these additional devices. For this topology, assign a subnet to each network. Determine the number of subnets in the network topology given. (5 marks)

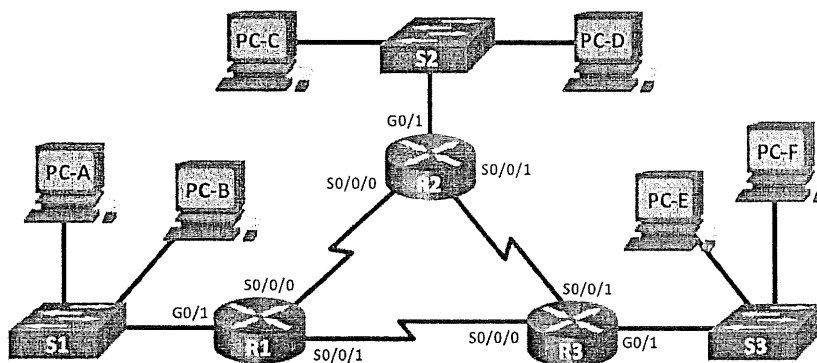


Figure 1: Network Topology

- i. How many subnets are there? \_\_\_\_\_
- ii. How many bits should you borrow to create the required number of subnets? \_\_\_\_\_

INTRODUCTION TO NETWORKS (DNT 1014)

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- iii. How many usable host addresses per subnet are in this addressing scheme? \_\_\_\_\_
- iv. What is the new subnet mask in dotted decimal format?  
\_\_\_\_\_
- v. How many subnets are available for future use? \_\_\_\_\_
- d) Discuss the issues of IPv4 that is needs to migrate to IPv6. (5 marks)

**QUESTION 4**

- a) Read the scenario: As a Network Consultant at Tanjung Network Resources, Kertih. The client is TATI University College request from your company to create the server for their company. Assume that TATI University College did not have server yet. The issue faced by the clients are web hosting, remote logging, file sharing and sending email. Discuss the servers that your client needs to be install. Then, sketch the network diagram related to the servers. (10 marks)
- b) A threat is something that may or may not happen but has the potential to cause serious damage. Threats can lead to attacks on computer systems, networks and more. Discover **ONE (1)** types of method used to attack the network system. (5 marks)

INTRODUCTION TO NETWORKS (DNT 1014)

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**QUESTION 5**

- a) Carry out the concept of redundancy in a small network. (4 marks)
- b) Sketch a diagram of small network that include end device, intermediary device and transmission medium. (5 marks)
- c) Discuss **THREE (3)** ways to mitigate the network attack. (6 marks)

-----END OF QUESTIONS-----