UNIVERSITY COLLEGE TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET	
COURSE CODE	: DNT 1014
COURSE	: INTRODUCTION TO NETWORK
SEMESTER/SESSION	: 2-2022/2023
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 4 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

a) Describe the email server in network components. (2 marks)

b) Identify **TWO (2)** functional can enable in peer-to-peer network. (2 marks)

c) Illustrate logical topologies of simple network involve **TWO (2)** PCs. (4 marks)

Table 1

PC name	IP Address	Subnet mask
PC_1	192.168.1.2	255.255.255.0
PC_2	192.168.1.3	255.255.255.0

d) Which network media provide faster throughput. Explain your answer. (4 marks)

e) Stated **THREE (3)** all elements of communication. (3 marks)

f) Illustrate PDU passing in encapsulation and de-encapsulation (5 marks)

QUESTION 2

a) Give definition of data encapsulation process. (2 marks)

b) Describe a destination IP address. (2 marks)

c) List **FOUR (4)** basic of network layer operations. (4 marks)

d) Describe purpose of network layer in OSI. (2 marks)

e) Justify **THREE (3)** reasons of unreliable the characteristic of IP. (6 marks)

f) As IPv4 is not enough to allocate all user around the world, how to mitigate this problem for short terms and long-term solutions. Explain your answer. (6 marks)

QUESTION 3

a) Stated **TWO (2)** features of binary and decimal numbering systems. (2 marks)

b) Calculate the following IPv4 value and insert value in Table 2 (16 marks)

i. Host IP Address : 128.107.0.55
Original subnet mask : 255.255.0.0
New subnet mask : 255.255.255.0

ii. Host IP Address : 192.168.1.245
Original subnet mask : 255.255.255.0
New subnet mask : 255.255.255.252

Table 2

	(i)	(ii)
Number of Subnet Bits		
Number of Subnets Created		
Number of Host Bits per Subnet		
Number of Hosts per Subnet		
Network Address of this Subnet		
IPv4 Address of First Host on this Subnet		
IPv4 Address of Last Host on this Subnet		
IPv4 Broadcast Address on this Subnet		

c) Why is the subnet mask so important when analyzing an IPv4 address? (4 marks)

QUESTION 4

a) Based on Figure 1. Identify and label the IPv4 address structure. (2 marks)

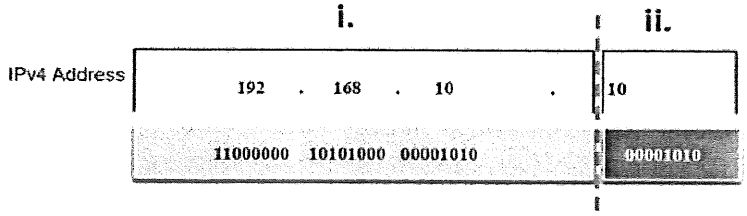

Figure 1: IPV4 structures

b) List **THREE (3)** types of IP addresses. (3 marks)

c) Illustrate and brief the following IPv4 transmission

i. Unicast (3 marks)

ii. Broadcast (3 marks)

iii. Multicast (3 marks)

d) Completed Table 3 with IP range and CIDR notation. (6 marks)

Table 3

Classes	IP Range	CIDR
Class A		
Class B		
Class C		

QUESTION 5

a. Based on Figure 2, identify the new CIDR for:

i. BR2 LAN (1 mark)

ii. BR2 IoT LAN (1 mark)

iii. BR2 CCTV LAN (1 mark)

iv. BR2 HVAC C2LAN (1 mark)

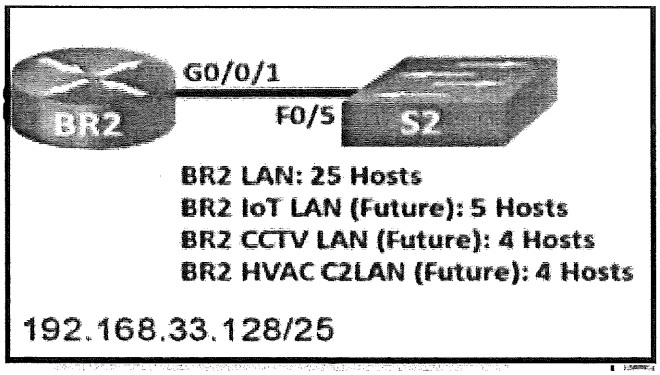

Figure 2: Network topologies

b. List **FOUR (4)** factors in selecting network devices. (4 marks)

c. Identify **THREE (3)** devices that need IP addressing. (3 marks)

d. State **TWO (2)** command available to verify connectivity. (2 marks)

e. Give **THREE (3)** factors to scale a network. (3 marks)

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