UNIVERSITY COLLEGE TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET	
COURSE CODE	: DNT 1034
COURSE	: ROUTING AND SWITCHING
SEMESTER/SESSION	: 1 – 2022/2023
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer **ALL** questions.
3. All answers should be written in answer booklet.
4. Write legibly and draw sketches wherever required.
5. 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

QUESTION 1

a) State **FIVE (5)** elements of a converged network. (5 marks)

b) Discuss **FIVE (5)** roles of switched network. (10 marks)

QUESTION 2

a) Give **FIVE (5)** benefits of VLAN. (5 marks)

b) Carry out the command of VLAN configuration. (4 marks)

c) Based your understanding on VLANs protocol, Give IOS commands for the following question. Please answer based on Figure 1 and Table 1 given.

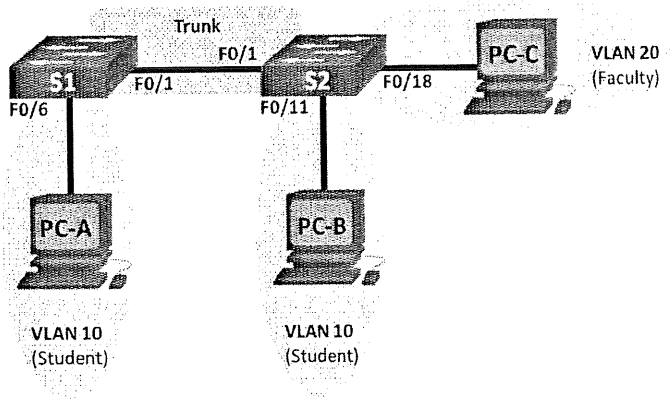

Figure 1: Topology

Table 1: Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
S1	VLAN 99	192.168.1.11	255.255.255.0	N/A
S2	VLAN 99	192.168.1.12	255.255.255.0	N/A
PC-A	NIC	192.168.10.3	255.255.255.0	192.168.10.1
PC-B	NIC	192.168.10.4	255.255.255.0	192.168.10.1
PC-C	NIC	192.168.20.3	255.255.255.0	192.168.20.1

i. Create VLANs on S1. (3 marks)

ii. Assign PC-A to the Student VLAN. (3 marks)

iii. Assign IP address to VLAN 99 on S1 and S2. (4 marks)

iv. Remove the VLAN 10 from F0/24 at S1. (2 marks)

v. Add VLAN 30 and associate with interface F0/24 on S1 (2 marks)

QUESTION 3

a) Construct **FIVE (5)** facts about static routing. (10 marks)

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) Due to Figure 2, configure a static route to a specified distant network based on a next-hop IP address or exit interface.

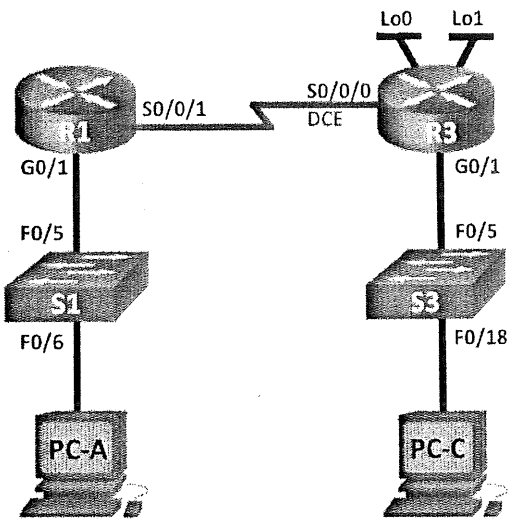

Figure 2: Topology

Table 2: Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/1	192.168.0.1	255.255.255.0	N/A
	S0/0/1	10.1.1.1	255.255.255.252	N/A
R3	G0/1	192.168.1.1	255.255.255.0	N/A
	S0/0/0 (DCE)	10.1.1.2	255.255.255.252	N/A
PC-A	NIC	192.168.0.10	255.255.255.0	192.168.0.1
PC-C	NIC	192.168.1.10	255.255.255.0	192.168.1.1

i. Configure default static route on R1. (1 mark)

ii. Configure a directly connected static route on R3. (1 mark)

iii. Configure IP address on the R3 S0/0/0 interface. (2 mark)

iv. Remove static route on R1. (1 mark)

d) State **FIVE (5)** best practices for security in switches. (5 marks)

QUESTION 4

a) Fill the Table 3 given with appropriate answer. (10 marks)

Table 3

CIDR	Subnet Mask	Wildcard Mask
/25		
/24		
/23		
/22		
/21		

b) Discover the similarities between OSPFv2 to OSPFv3. (5 marks)

QUESTION 5

a) List **TWO (2)** ways to assign IP address. (4 marks)

b) Sketch the DHCPv4 operation with simple explanation. (5 marks)

a) Explain the operation of Access Control Lists (ACLs). (6 marks)

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