



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DNT 2024
COURSE	: CONNECTING NETWORKS
SEMESTER/SESSION	: 1-2021/2022
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 6 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

- a) Describe the application of three-tier hierarchical design for small company. (2 marks)
- b) Explain the **FOUR (4)** needs of Wide Area Network (WAN) over Local Area Network (LAN). (8 marks)
- c) Define the term teleworking (2 marks)
- d) Brief **TWO (2)** benefits and weaknesses of teleworking in each. (8 marks)

QUESTION 2

- a) Define the following WAN terminology:
 - i. Customer Premises Equipment (2 marks)
 - ii. Demarcation Point (2 marks)
 - iii. Local Loop (2 marks)
 - iv. Data Communications Equipment (DCE) / Data Terminal Equipment (DTE) (2 marks)
- b) Justify the necessity of Wide Area Network in data communications. (2 marks)
- c) Differentiate between Circuit Switching and Packet Switching. (4 marks)
- d) Produce **THREE (3)** factors in choosing an appropriate WAN connection. (6 marks)

QUESTION 3

- a) Describe the **THREE (3)** benefits of using PPP over HDLC in a WAN (6 marks)
- b) List **THREE (3)** Point-to-Point (PPP) main component. (3 marks)
- c) Classify **THREE (3)** phases in establishing PPP session. (6 marks)
- d) Refer to Figure 1 (assume basic configurations on topology's devices are completed). Configure PPP configuration with PAP authentication on router Branch1 with username *B1* and password *dnt2024*. (5 marks)

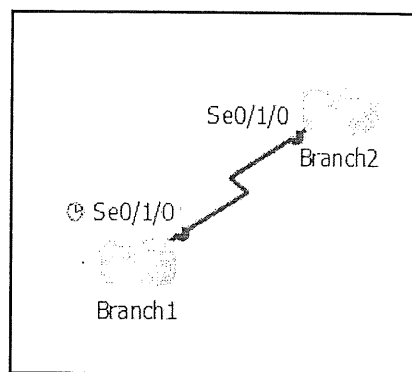


Figure 1

QUESTION 4

- a) Define **TWO (2)** types of IPv4 address applied in Network Address Translation (NAT) (2 marks)
- b) Classify **THREE (3)** types of NAT translation. (6 marks)
- c) Refer to Figure 2, assume packet travel from PC1 to HTTP Server. Show appropriate IP address for the following NAT terminology while the packet travel on the following phase: (12 marks)
- Phase 1:
 - Source address (Inside local)
 - Destination address (Outside local)
 - Phase 2:
 - Source address(Inside global)
 - Destination address (Outside global)
 - Phase 3:
 - Source address(Inside global)
 - Destination address (Outside global)

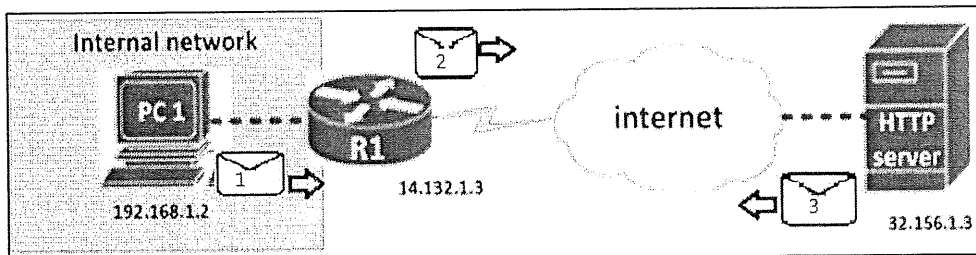


Figure 2

QUESTION 5

a) Scenario:

You have just been recruiting as network technical person in small company that includes ten hosts with printer shared by network. You are required to set up new network, and you discover that the connection is not working correctly. Some of the devices cannot access each other and some cannot access the printer and integrated service router (ISR) which connects to the ISP. It is your responsibility to troubleshoot and fix the problems.

Answer the following questions based on the above scenario.

- i. Indicate **THREE (3)** features that should be included in network documentation for smooth troubleshooting process. (6 marks)
 - ii. Show **FOUR (4)** proposed basic commands to identify possible troubleshooting areas. (4 marks)
- b) Configure SNMP agent on R1 and S1 based on topology in Figure 3 and IPv4 addressing in Table 1 (10 marks)

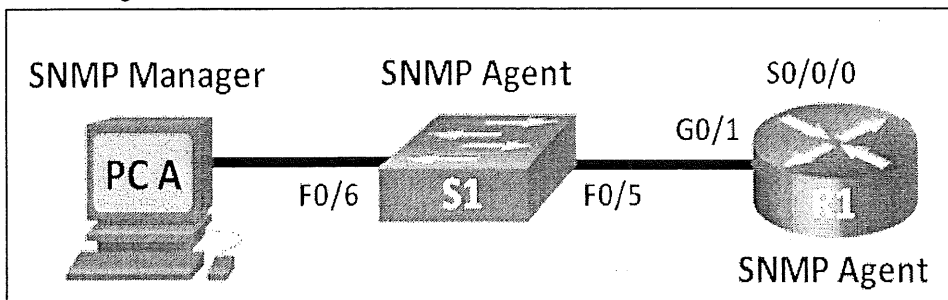


Figure 3

Table 1

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	G0/1	172.16.1.1	255.255.255.0	N/A
	S0/0/0	10.10.1.1	255.255.255.252	N/A
S1	VLAN 1	172.16.1.2	255.255.255.0	N/A
PC-A	NIC	172.16.1.3	255.255.255.0	172.16.1.1

-
- i. SNMP community string is "MGMT", with read-only privileges, and the named access list SNMP_ACL defines which hosts are allowed to get SNMP information from R1.
 - ii. SNMP manager location is "SNMP_MANAGER".
 - iii. SNMP manager contact information is "ALI".
 - iv. SNMP manager IP address, the SNMP version "SNMPv2c", and the community string.
 - v. Enables all default SNMP traps.
 - vi. Create the named access list, to control which hosts are permitted to get SNMP information from the router.

-----End of question-----