



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

QUALIFICATION : BACHELOR OF INFORMATION TECHNOLOGY: SYSTEM ADMINISTRATION AND NETWORKS	
QUALIFICATION CODE: 80BSAN	LEVEL: 7
COURSE: Internet and WAN Telecommunication	COURSE CODE: IWT711S
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DURATION: 2H00	MARKS: 65

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
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THIS QUESTION PAPER CONSISTS OF 4 PAGES

(Excluding this front page) **INSTRUCTIONS**

1. Answer ALL the questions on the answer scripts.
2. Write clearly and neatly.
3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Calculator.

SECTION A (15 MARKS)

1. Which of the following is the correct network address for the IPv6 node with IPv6 address?
 - a) 2000:3000:8B74:0130:2E0:8FFF:FE89:1A02/64?
 - b) 2000::2E0:8FFF:FE89:1A02/64
 - c) 2000:3000:8B74:0130::/64
 - d) 2000:3000:8B74:0130:2E0::/64
 - e) None of the above

2. Frame Relay permanent virtual circuits only exist in which two modes?
 - a) Call Setup and Transfer modes
 - b) Transfer and Idle Modes
 - c) Call Termination and Transfer modes
 - d) Call Setup and Idle modes
 - e) None of the above

3. Which of the following does not affect the fee charged when using leased lines?
 - a) Length of connection time (daily, weekly, etc)
 - b) Length of connection cable (metres, miles, etc)
 - c) Circuit speed
 - d) Distance between the end points
 - e) None of the above

4. Which multiplexing technique shifts each signal to a different carrier frequency?
 - a) FDM
 - b) TDM
 - c) Both (a) and (b)
 - d) None of the above

5. What is the use of the ISDN D channel?
 - a) Carry information about the call like caller identity, session initiation and termination
 - b) signals
 - c) Technology that transmits data over PSTN
 - d) Carries voice, video, audio and data
 - e) It combines network termination and terminal adapter services
 - f) None of the above

6. Which of the following is a device used to make WAN connections? (Choose all that apply.)
 - a) 10BaseThub
 - b) CSU/DSU
 - c) Router
 - d) Ethernet repeater
 - e) None of the above

7. Which of the following is a common WAN connection method? (Choose all that apply.)
- a) Circuit switched
 - b) Packet leased
 - c) VPN over POTS
 - d) Packet switched
8. Which of the following combines several communication streams into a single faster communication stream?
- a) Multiplexing
 - b) Demultiplexing
 - c) CSU
 - d) DSU
9. Which of the following technologies provides permanent virtual circuits? (Choose all that apply.)
- a) PSTN
 - b) Frame relay
 - c) ADSL
 - d) ISDN
 - e) None of the above
10. To maintain security, WAN connections over the Internet should use which of the following?
- a) BRI
 - b) LANE
 - c) OC-3
 - d) VPN
 - e) None of the above
11. Which term best describes the place in a WAN connection where the customer's responsibility ends, and the provider's responsibility begins?
- a) Data circuit-terminating equipment
 - b) Demarcation point
 - c) CPE
 - d) Central office
 - e) None of the above
12. _____ will control speed and timing of WAN communication?
- a) SDLC
 - b) DCE
 - c) HDLC
 - d) DTE
 - e) None of the above
13. We can divide _____ into two different schemes: synchronous or statistical.
- a) TDM
 - b) FDM
 - c) WDM
 - d) None of the above

14. Which VPN technology implements confidentiality?
- a) Authentication Header
 - b) ESP
 - c) MD5
 - d) ISAKMP
 - e) AES
15. Which of the following uses ATM as the Data Link layer protocol that's terminated at what's known as the DSLAM?
- a) DSL
 - b) PPPoE
 - c) Frame Relay
 - d) Dedicated T1
 - e) Wireless

SECTION B (50 MARKS)

1. Name four steps that are used when packets are sent in Frequency Division Multiplexing (FDM) [6 marks]
2. What are the roles of the following MPLS routers [6 marks]
 - a) Label Edge Router ("LER") or "ingress node".
 - b) Label Switching Router ("LSR") or "transit node"
 - c) Egress Node
3. At what layer(s) of The OSI model does frame relay operate? [2 marks]
4. There are seven ATM Concepts, name four of them [4 marks]
5. What is the Local Management Interface (LMI)? [3 marks]
6. Name three types of LMIs that are supported by Cisco routers. [3 marks]
7. State and describe two types of Network Address Translation (NAT) addresses. [4 marks]
8. What is the IPv6 address space? [1 mark]
9. Name 3 basic modulation techniques [3 marks]
10. What is the purpose of an access server? [2 marks]

Use Figure 1 to answer question 11.

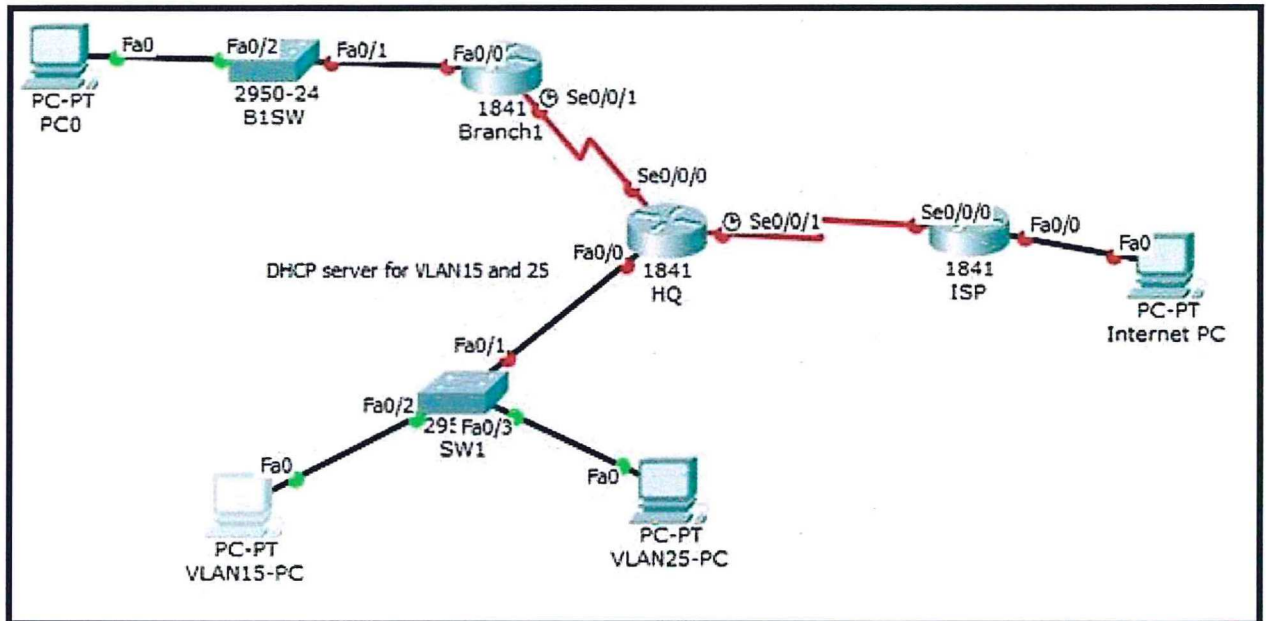


Figure 1: DHCP and NAT

11. HQ router is used as a DHCP server for VLANs 15 and 25. Suppose the networks 192.168.25.0/25 and 192.168.25.128/25 are used for VLAN 15 and 25 respectively.

- a) Which IP address are you going to use for VLAN 15 gateway? [1 mark]
- b) State the network, subnet mask and gateway that is configured on the HQ router for VLAN25 [3 marks]
- c) Which address/es will be excluded from automatic assignment for VLAN 15? [1 mark]
- d) Suppose HQ is being used as the DHCP server for BRANCH1 LAN. Which DHCP concept will be configured on BRANCH1? [1 mark]
- e) What is used on the HQ interface connected to SW1 that enables it to become the gateway for both VLAN 15 and 25? [1 mark]
- f) Which transport protocol is used by DHCP? [1 mark]
- g) What is the purpose of a DHCP release? [2 marks]
- h) What is a DHCP OFFER Message? [2 marks]
- i) What is DHCP Relay used for? [2 marks]
- j) What is a DHCP NAK Message? [2 marks]

Good luck!!