



UNIVERSITY COLLEGE TATI (UCTATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: BNS 1033
COURSE	: INTRODUCTION TO NETWORK
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. The use of any type of calculator is not permitted.
5. If in doubt, rise up your hands and ask the invigilator.

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

THIS BOOKLET CONTAINS 4 PRINTED PAGE INCLUDING COVER PAGE

QUESTION 1

IP addresses and MAC addresses are both used in modern networks for any communication, on a small local network or a wide area network like the Internet. IP in the computer networking refers to both the IPv4 and IPv6 protocols. IPv6 is the most recent version of IP and is replacing the more common IPv4.

- a. What is the difference between IP and MAC addresses? (4 marks)
- b. Describe the functions of MAC and IP addresses in the networking devices. (4 marks)
- c. Show the translations of MAC and IP addresses in the ARP protocol. (4 marks)
- d. Justify **FOUR (4)** reasons why we need for moving from IPv4 to IPv6. (8 marks)

QUESTION 2

- a. Change the IP address **172.16.10.112** from dotted-decimal notation to binary notation:
(*Calculation process is compulsory*) (2 marks)
- b. Change the IP address **00001111 01111111 11011000 10100100** from binary notation to dotted-decimal notation: (*Calculation process is compulsory*) (2 marks)
- c. Find the **netid** and **hostid** of the following IP addresses:
 - i. **100.23.40.25**
 - ii. **199.190.67.18** (4 marks)
- d. For the subnet mask **255.240.0.0** used in class A, find the number of 1s that defines the subnet. (*Calculation process is compulsory*) (2 marks)
- e. Write subnet mask for network prefix **/16** and **/24**. (2 marks)

QUESTION 3

As a Network Administrator at the company CISCO Malaysia, you have a blueprint to produce a new block of network address **172.16.0.0** with **64** subnets. Share the information below with your staff to make it easier to understand. Calculation processes are compulsory.

- i. Show the class of IP address. (1 mark)
- ii. Show the default mask. (1 mark)
- iii. Show the broadcast address of the network. (2 mark)
- iv. Show the subnet mask. (2 marks)
- v. Show the number of addresses in each subnet. (10 marks)
- vi. Show the first usable subnet. (2 marks)
- vii. Show the first usable address in the first usable subnet. (2 marks)
- viii. Show the broadcast address in the first usable subnet. (2 marks)
- ix. Show the last usable subnet. (2 marks)
- x. Show the last usable address in the last usable subnet. (2 marks)
- xi. Show the broadcast address in the last usable subnet. (2 marks)

QUESTION 4

There are two types of routing protocols; static and dynamic. Dynamic Routing protocols are classified into two major categories: distance vector protocols and link-state protocols. Routing Information Protocol (RIP) and Open Shortest Path First (OSPF) are among the most popular Dynamic Routing protocols in TCP/IP suite.

- a. Write a set of commands on how to activate a static routing protocol in a router. (3 marks)
- b. Write a set of commands on how to activate a RIP routing protocol in a router. (3 marks)

- c. What factors will help you to choose RIP routing protocols is best for your network?
(6 marks)
- d. Differentiate the capability of distance vector protocol compare to link-state routing protocol.
(8 marks)

QUESTION 5

- a. Draw a diagram of the Internet Protocol Suite (TCP/IP) model and show in detail it's protocols in respective layers.
(10 marks)
- b. The underlying protocol was and still is fundamental in ensuring the functionality of the network, include both the Transmission Control Protocol (TCP) and the User Datagram Protocol (UDP). Briefly explain the differences between TCP and UDP?
(10 marks)

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