

SIR ARTHUR LEWIS COMMUNITY COLLEGE
FACULTY OF ENGINEERING
ACADEMIC YEAR (2024/2025) – SEMESTER TWO
END OF SEMESTER EXAMINATION

LECTURUER(S) : **Mr Shane Joseph**
PROGRAMME TITLE : **Computer Systems Engineering**
COURSE TITLE : **Computer Networking**
COURSE CODE : **CMP204**
LEVEL : **Associate Degree/ Year Twos**
PAPER : **Two (2)**
DATE : **Wednesday, 30th April 2024**
COMMENCEMENT TIME : **9:00a.m.**
DURATION : **Two (2) Hours**
INVIGILATOR(S) : **D. Joseph (Chief), P. Beausoliel, M. St Clair,
A. Melius, K. Frederick**
ROOM(S) : **OTW-1R-08**

GENERAL INFORMATION AND INSTRUCTIONS

- This paper consist of One (1) Section with ten (10) long answer questions. You are required to attempt all questions on the foolscap provided. Marks are awarded accordingly.
- Students must produce sufficient working steps, to justify solution.
- Write legibly in blue or black ink. Please number your responses accurately.
- The number in the brackets “()” next to each question are the marks allocated.
- Students must sign **IN** and **OUT** on the examination class list.
- Students must **not** write their names on their answer sheets, only their ID number

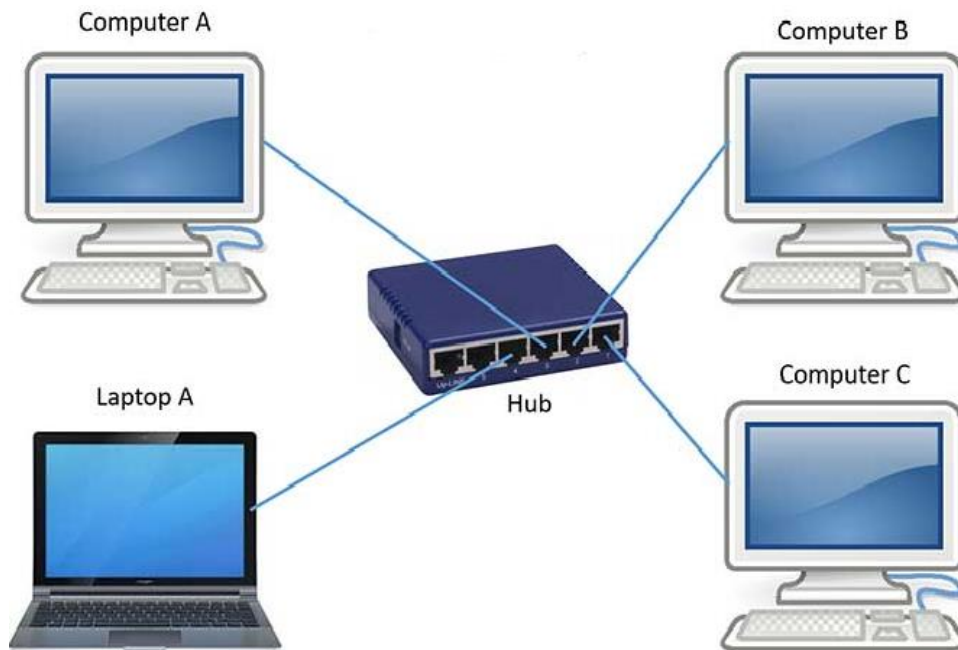
**DO NOT TURN THIS COVER SHEET UNTIL
YOU ARE TOLD TO DO SO!!!**

SECTION A

You are required to answer all questions in this section. (Marks are awarded accordingly).

Question One

(10 marks)



- (A) Determine the network configuration type in the figure above. (1 mark)
- (B) Explain two advantages of utilizing this network configuration. (4 marks)
- (C) What is the function of the hub highlighted in the figure above? (2 marks)
- (D) The configuration in *Figure 1* is usually used in LANs. Give two defining characteristics of a **Local Area Network (LAN)**. (2 marks)
- (E) Give one other method of configuring a LAN. (1 mark)

Question Two

(10 marks)

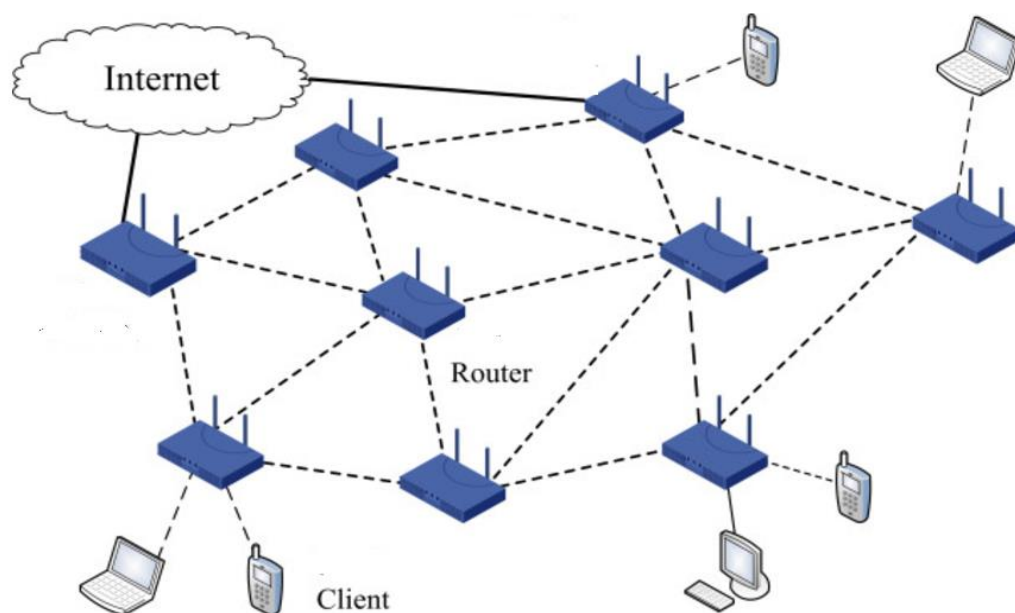
- (A) GenZ-Web, A web design company is considering the use of a **Local Area Network (LAN)** and hired a network consultant for professional services. The consultant informed them that they can either use their computers in one of two ways:
 1. Connect to a LAN

OR

 2. Use the computers as a standalone computer.
 - (i) Give two advantages for designers when using their computers in standalone mode. (2 marks)
 - (ii) Give two advantages for designers when working on the network. (2 marks)
- (B) GenZ-Web is connecting their offices across the region using a **Wide Area Network (WAN)**.
 - (i) Identify two security measures that could be put in place when connecting different their different office locations over a **WAN**. (2 marks)
 - (ii) Outline two benefits to GenZWeb when using a **WAN**. (2 marks)

- (C) What type of switching does the Internet use? (1 marks)
- (D) What type of switching establishes a dedicated communication path before transmission begins? (1 mark)

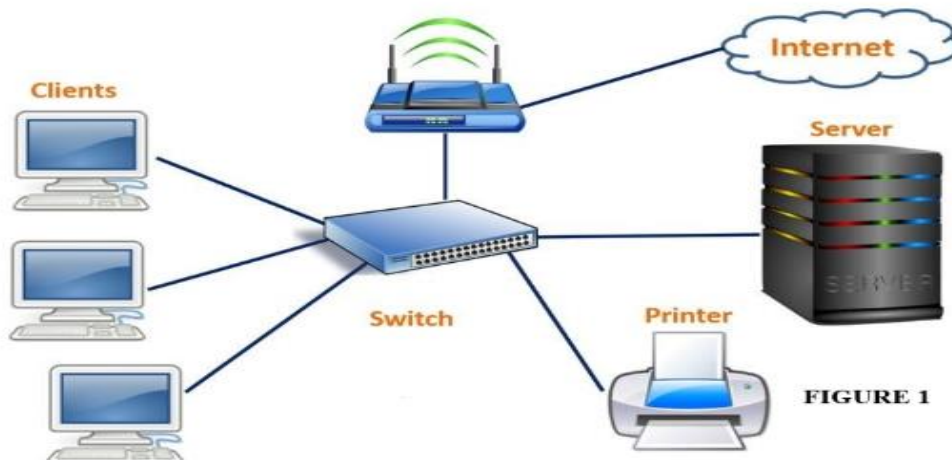
Question Three (10 marks)



- Name the physical topology used in the configuration in the figure above. (1 mark)
- (B) Give two advantages of the topology used in the configuration in the figure above. (2 marks)
- (C) For the topology in figure 1. Give the consequence if a connection fails. (2 marks)
- (D) The 802.3 CSMA/CD is the access method that is the basis for Ethernet.
 - (i) Explain how CSMA/CD works as a media access method. (5 marks)

Question Four (10 marks)

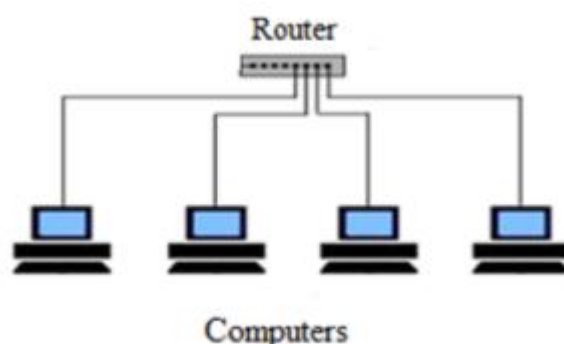
- (A) Which network cable type is commonly used in Ethernet Networking? (1 mark)
- (B) Give two advantages of the cable type mentioned in (A) above. (2 marks)



- (C) What is the consequence if a client fails and the consequence if the Switch Fails in the configuration in *Figure 1*? (2 marks)
- (D) Name the two EIA/TIA wiring standards. (2 marks)
- (E) Discuss the importance of cable management in network topology design. What strategies can be employed to organize and secure cables effectively? (3 marks)

Question Five

(10 marks)



- (A) Using IP address assignment criteria for this network type, assign an IP address from the private address space 192.168.20.x to each network device in the network configuration in *Figure 1*. (5 marks)
- (B) Explain the physical connection from the Router to a modem to facilitate successful connection of the network in Figure 1 to the Internet. (2 marks)
- (C) What will be the named function of the Router? (1 mark)
- (D) What is the default mask for this network? (1 mark)
- (E) Give the network address for this network. (1 mark)

Question Six

(10 marks)

- (A) Define the term Subnetwork (1 mark)
- (B) Give two benefits of subnetting an IP Network. (2 marks)
- (C) Using the IP address 172.31.50.0/25 Determine the Following
 - (i) What is the subnet mask for the IP address? (1 mark)
 - (ii) How many subnets can be created from the IP address (1 mark)
 - (iii) How many usable hosts can be accommodated in each subnet? (1 mark)
 - (iv) What is the range of usable IP addresses in the subnet 172.31.50.128? (2 marks)
 - (v) What is the broadcast address for the subnet 172.31.50.0? (1 mark)
 - (vi) If you need to create 8 subnets from the IP address 192.168.20.0 what will be the subnet mask for each subnet? (1 mark)

Question Seven

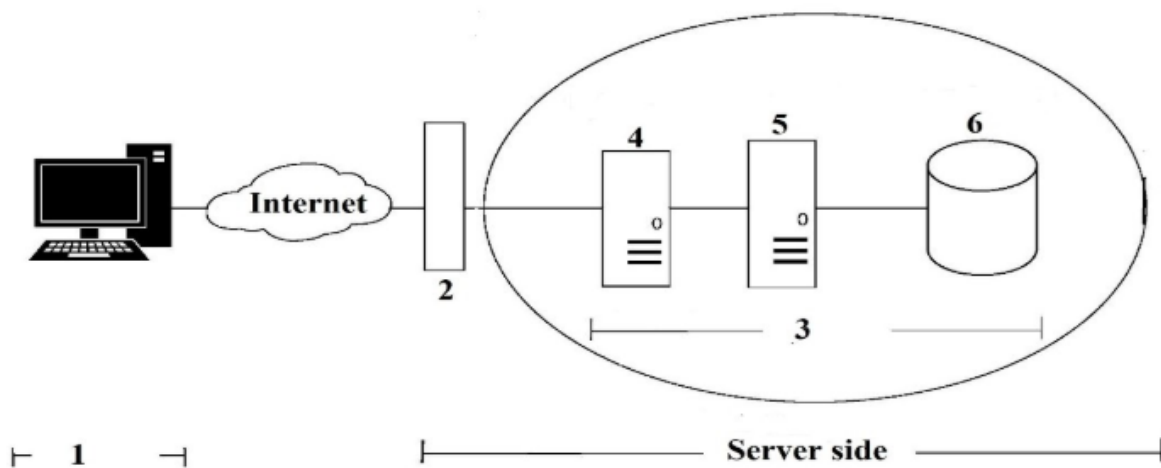
(10 marks)

- (A) The Internet is categorized as a WAN. State why (1 mark)
- (B) With regards to Coverage Area and Ownership differentiate WANs from LANs and MANs. (6 Marks)
- (C) Give (3) measures that can be implemented to prevent access to a Wireless LANs (3 Marks)

Question Eight

(10 marks)

- (A) Give the elements of an E-commerce model (6 marks)
- (B) From a consumers' perspective, give two (2) disadvantages of using E-commerce (2 marks)
- (C) Give one driver of E-commerce. (1 mark)
- (D) Give the names of the numbered components in the web-based e-commerce Tier diagram below (6 marks)



Question Nine

(10 marks)

- (A) Using a suitable example, explain the data transmission and security process “cryptography” (5 marks)
- (B) The “Access control” information security services provided over a network or internetwork includes these essential services: Authentication, Authorisation and Accountability. Briefly explain each term. (3 marks)
- (C) Network Attack sources can be “Active” or “Passive”. Give an example of each. (2 marks)
- (D) In reference to digital security, what is non-repudiation? (1 mark)

Question Ten

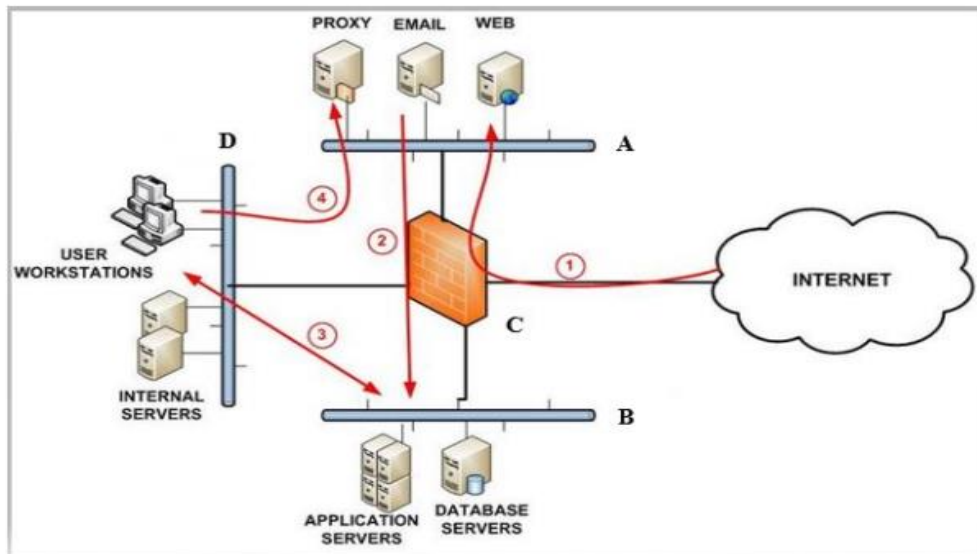
(10 marks)

(A) What is a DMZ in networking, and what is its purpose?

(3 Marks)

(B) Most businesses have a well-defined network structure that includes a secure internal network zone and an external untrusted network zone. In the Diagram below, based on the flows numbered 1,2,3 and 4, indicate the names of the zones and components labelled A, B, C and D.

(4 Marks)



(C) Explain the following types of Internet attacks.

(3 Marks)

END OF EXAMINATION!!