

**FINAL EXAMINATION**

**BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN COMPUTER
APPLICATION DEVELOPMENT**

**BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN
CYBER SECURITY**

**BACHELOR OF INFORMATION TECHNOLOGY (HONOURS)
(DATA ANALYTICS)**

**COURSE : DATA COMMUNICATION AND
NETWORKING**

COURSE CODE : NWC2263

DURATION : 3 HOURS

INSTRUCTIONS TO CANDIDATES:

1. This question paper consists of **FOUR (4)** questions.
2. Answer **ALL** questions in the Answer Booklet provided.
3. Please check to make sure that this examination pack consists of:
 - i. The Question Paper
 - ii. An Answer Booklet
4. Do not bring any material into the examination hall. The use of a calculator is allowed.
5. Please write your answer using permanent ink.

MYKAD/PASSPORT NO : _____

ID. NO. : _____

LECTURER : _____

SECTION : _____

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

This question paper consists of 4 printed pages including the front page

QUESTION 1

- a. Differentiate the types of networks: LAN, MAN, and WAN. (9 marks)
- b. Briefly explain Full Duplex transmission mode and give **TWO (2)** examples. (4 marks)
- c. Figure 1 depicts a type of network topology.

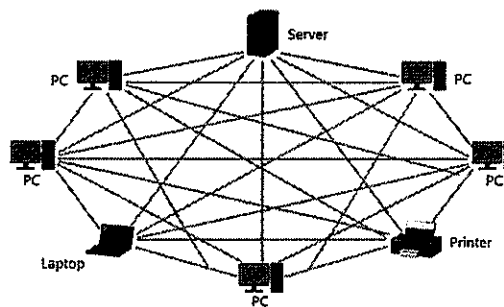


Figure 1

- i. Based on Figure 1, state the type of network topology. (1 mark)
- ii. Estimate the number of cables used in the network shown in Figure 1. (5 marks)
- iii. Estimate the number of ports used in the network shown in Figure 1. (3 marks)
- d. Illustrate a hybrid topology diagram consisting of a star backbone connected with three ring networks and for every ring network connected with a bus network. (8 marks)

(Total : 30 marks)

QUESTION 2

- a. Discuss **TWO (2)** categories of transmission media and give **TWO (2)** examples for each category.

(10 marks)

- b. A company needs a low-cost network installation within a small office. Discuss the most suitable transmission medium and justify your answer.

(5 marks)

- c. Describe satellite communication and illustrate the components involved in satellite transmission.

(5 marks)

(Total : 20 marks)

QUESTION 3

- a. Describe the Stop-and-Wait flow control mechanism. Justify **ONE (1)** advantage and **ONE (1)** disadvantage of Stop-and-Wait.

(6 marks)

- b. Illustrate how a damaged frame is retransmitted when Go-Back-N ARQ is used in the following data transmission.

- The sender sends 5 frames (F0 - F4) to the receiver, but F2 lost in transmission, and the receiver sends a negative acknowledgment to the sender.
- The sender retransmits the corresponding frames.

(12 marks)

- c. A sender transmits four frames (F0–F3) using Selective Reject ARQ. The receiver receives all frames and sends an acknowledgment to the sender. Then, the sender transmits another two frames (F4-F5), but frame F5 is damaged during transmission, and the receiver sends a negative acknowledgment to the sender. Illustrate how the protocol ensures reliable delivery of all frames.

(12 marks)

(Total : 30 marks)

QUESTION 4

- a. Consider the Token Ring diagram in Figure 2. Explain how Token Passing works if Station 1 wants to send data to Station 4, assuming the data flows in an anticlockwise direction.

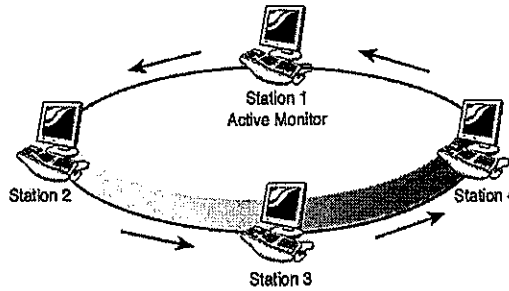


Figure 2

(10 marks)

- b. Distinguish whether Wireless LAN (802.11b) is better than wired Ethernet for enterprise use.

(10 marks)

(Total : 20 marks)

(TOTAL : 100 MARKS)

END OF QUESTION PAPER