UNIVERSITI POLY-TECH MALAYSIA

UPTM

FINAL EXAMINATION

BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN BUSINESS COMPUTING

COURSE	:	DATA COMMUNICATION AND NETWORK
COURSE CODE	:	NWC2153
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 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 3 printed pages including the front page

QUESTION 1

a. The main objective of data communication and networking is to enable seamless exchange of data between any two points in the world. The efficiency of this system depends on four factors. Explain how the accuracy and timeliness factors affect the effectiveness of a data communication system.

(4 marks)

b. A data communication model comprises five components of data communication. Briefly explain all the **FIVE (5)** components.

(10 marks)

c. Assume ten devices are arranged in a mesh topology. How many cables are needed?

(4 marks)

d. Consider the same topology in 1(c). How many ports are needed for each device?

(3 marks)

e. Briefly explain **THREE (3)** types of transmission mode and give **ONE (1)** example of each type.

(9 marks)

(Total : 30 Marks)

QUESTION 2

a. Twisted-pair cable is an example of guided transmission media, and it was invented by Alexander Graham Bell. Describe **TWO (2)** types of twisted-pair cable.

(4 marks)

b. Fiber optic is widely used for long-distance and high-performance data networking due to its advantages. Briefly describe **TWO (2)** disadvantages of fiber optic.

(4 marks)

c. Elaborate **THREE (3)** types of signals transmitted through unguided media.

(9 marks)

d. Unguided signals can travel from source to destination in numerous ways. State all **THREE (3)** of them.

(3 marks)

(Total : 20 marks)

QUESTION 3

a. Describe **THREE (3)** functions of Data Link layer?

(6 marks)

b. Consider a sender sends five frames to the receiver and the frames are labelled as F0, F1, F2, F3 and F4. Frame F2 is lost during the transmission. Thus, the receiver sends a negative acknowledgment to notify the sender. Draw a diagram to show how Go-Back-N-ARQ method is used to retransmit the lost frame.

(11 marks)

c. Illustrate the transmission between the sender and receiver to show how eight frames are transmitted. Data frame number 2 is damaged during the transmission. Show how the Selective-Reject approach is used to solve this problem.

(13 marks)

(Total : 30 marks)

QUESTION 4

a. Briefly explain baseband and broadband.

(4 marks)

b. Describe **THREE (3)** advantages of wireless LAN.

(6 marks)

c. What does CSMA/CD stand for and how does it work?

(10 marks)

(Total : 20 marks)

(TOTAL : 100 MARKS)

END OF QUESTION PAPER