CONFIDENTIAL

Infrastructure University Kuala Lumpur

SUNWAY INT'L BUSINESS SCHOOL

OPEN BOOK ASSESSMENT
JUNE SEMESTER 2021

DATA STRUCTURE AND ALGORITHMS
(CSC2511)

(TIME: 2 HOURS)

MATRIC NO. : | | | | | | | | | |

IC. / PASSPORT NO. : | | | | | | | | | | | | | | |

LECTURER : **PRAKASH CHANDRA PRASAD**

GENERAL INSTRUCTIONS

1. This question booklet consists of 3 pages including this page.
2. Answer **ALL questions** in the **ANSWER BOOKLET**.
3. **Please refer to following format while answering the Questions:**
   a. **Answers should be in Font: Times New Roman, Font size: 12 and single line spacing.**
   b. **Write the Question number clearly.**
   c. **Start new answer on a Fresh Page.**

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INSTRUCTIONS: **TIME:** ***2 HOURS***

(60 MARKS)

There are FOUR (4) questions in this section. Answer ALL Questions in the ANSWER BOOKLET.

1.

a. Explain the concept of binary search algorithm with an example.

(10 marks)

b. Determine efficiency of binary search algorithm for the example discussed above.

(5 marks)
(CLO1:PLO1:C2)

2.

a. Convert the following infix expression into a postfix expression using stack with all the required steps:
   i. (A+B) * C - (D-E) * (F+G)

(5 marks)

b. Write C-code to implement all the operations of STACK using a linked list.

(10 marks)
(CLO1:PLO1:C2)

3.

a. Explain the concept of circular queue, and its basic operations.

(5 marks)

b. Write C-code to Implement circular queue with following operation
   i. enqueue()
   ii. dequeue()
   iii. display()

(10 marks)
(CLO2:PLO2:C3)

4.

a. Explain the need and importance of AVL tree with an example.

(3 marks)

b. Use the following list of numbers to construct height balanced AVL tree
10,20,30,40,50,60,70,80
NOTE: show all the insertion and rotation steps.

(10 marks)

c. Delete the node with value 60 from the AVL tree constructed in question 4 b.

(2 marks)
(CLO1:PLO1:C2)

***** END OF QUESTIONS *****