

SECTION B : 55 MARKS***BAHAGIAN B : 55 MARKAH*****INSTRUCTION:**

This section consists of **TWO (2)** structured questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi DUA (2) soalan berstruktur. Jawab SEMUA soalan.

QUESTION 1***SOALAN 1***

- | | | |
|------------|--|---------------------------------|
| CLO1
C1 | <p>(a) Give the definition of Abstract Data Type (ADT).
<i>Berikan maksud Abstract Data Type (ADT).</i></p> | <p>[2 marks]
[2 markah]</p> |
| CLO1
C2 | <p>(b) Explain the differences between primitive and non-primitive data structure with an example.
<i>Terangkan perbezaan struktur data primitif dan non-primitif bersama satu contoh.</i></p> | <p>[4 marks]
[4 markah]</p> |
| CLO1
C1 | <p>(c) Define the List in data structure.
<i>Takrifkan List dalam struktur data.</i></p> | <p>[2 marks]
[2 markah]</p> |
| CLO1
C2 | <p>(d) Explain TWO (2) differences between Array and Linked List.
<i>Terangkan DUA (2) perbezaan antara Tatasusunan dan Senarai Berpaut.</i></p> | <p>[2 marks]
[2 markah]</p> |

- CLO1
C3
- (e) Illustrate a complete structure of Linked List which consist of **THREE (3)** nodes.
*Lukiskan struktur lengkap Senarai Berpaut yang terdiri daripada **TIGA (3)** nod.*
- [5 marks]
[5 markah]
- CLO1
C1
- (f) List **TWO (2)** operations of stack.
*Senaraikan **DUA (2)** operasi tindanan.*
- [2 marks]
[2 markah]
- CLO1
C2
- (g) Explain the **PUSH** operation in stack.
*Terangkan operasi **PUSH** dalam tatasusunan.*
- [2 marks]
[2 markah]
- CLO1
C3
- (h) Draw a suitable stack diagram for each statement below. Given that the linked list with name Z.
Lukiskan rajah tindanan yang sesuai berdasarkan pernyataan-pernyataan di bawah. Diberi adalah senarai berpaut diberi nama Z.
- i. Create Stack (Z);
ii. Push (77, Z);
iii. Push (79, Z);
iv. Pop ();
- [6 marks]
[6 markah]

QUESTION 2**SOALAN 2**CLO1
C1

(a) Define the concept used by Queue.

Terangkan konsep yang digunakan oleh Queue.

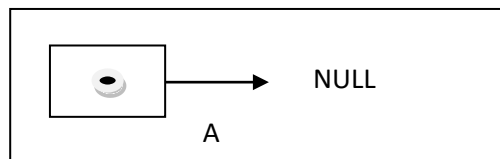
[2 marks]

[2 markah]

CLO1
C2(b) Explain **TWO (2)** operations used in Queue.*Terangkan DUA (2) operasi yang digunakan dalam Baris Gilir.*

[3 marks]

[3 markah]

CLO1
C3(c) Based on **Figure B2(c)**, illustrate the new diagram after these operations are executed using Linked List implementation of Queue.*Berdasarkan Rajah B2(c), berikan gambaran rajah baru selepas operasi-operasi ini dilaksanakan menggunakan Senarai Berpaut bagi Baris Gilir tersebut.***Figure B2(c)/ Rajah B2(c)**

i. Enqueue (15, &A)

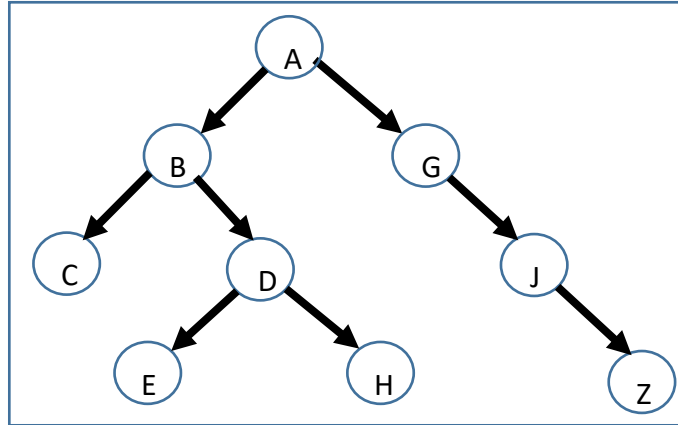
ii. Enqueue (12, &A)

iii. Enqueue (9, &A)

iv. Dequeue (&A)

[4 marks]

[4 markah]

CLO1
C1(d) Based on **Figure B2(d)**, identify each node below.*Berdasarkan Rajah B2(d), kenal pasti setiap nod di bawah.***Figure B2(d) / Rajah B2(d)**

i. Parent Node

Nod Bapa

i. Leaf Node

Nod Daun

ii. Sibling Node

Nod Adik beradik

iii. Child Node

Nod Anak

[4 marks]

[4 markah]

CLO1
C2

(e) Explain the following tree terminology.

Terangkan terminologi pepohon yang berikut.

i. Path

Laluan

ii. Parent

Nod Bapa

[2 marks]

[2 markah]

CLO1
C3

- (f) According to the list in Figure **B2(f)**, solve the following operation using appropriate approach of data structure.

*Berdasarkan senarai di bawah dalam Rajah **B2(f)**, selesaikan masalah berikut menggunakan pendekatan struktur data yang sesuai.*

28, 6, 79, 77, 18, 10, 25, 3, 78, 2, 4, 69, 85, 80, 91,

Figure B2(f) / Rajah B2(f)

- i. Illustrate the Binary Search Tree (BST) diagram.
Lukiskan gambar rajah Pepohon Carian Ddua.
- ii. Redraw the possibility Binary Search Tree (BST) after removing **node 6**.
*Lukis semula kemungkinan gambarajah Pepohon Carian Ddua selepas **nod 6** dikeluarkan.*

[7 marks]

[7 markah]

CLO1
C2

- (g) Identify **ONE (1)** difference between Binary Search and Linear Search.
*Kenal pasti **SATU (1)** perbezaan di antara Carian Binari dan Carian Linear.*

[2 marks]

[2 markah]

19	77	15	12	9	21	17
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Figure B2(h) / Rajah B2(h)

CLO1
C3

- (h) Based on **Figure B2(h)**, use Merge Sort for sorting **ascending order**. Show the steps involved.

*Berdasarkan **Rajah B2(h)**, gunakan kaedah Isihan Cantuman untuk mengisih susunan menaik. Tunjukkan langkah-langkah yang terlibat.*

[6 marks]

[6 markah]

SOALAN TAMAT