



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**PEPERIKSAAN AKHIR  
SEMESTER II  
SESI 2012/2013**

NAMA KURSUS : STRUKTUR DATA  
KOD KURSUS : DAT 20104  
PROGRAM : 1 DAT  
TARIKH PEPERIKSAAN : MAC 2013  
JANGKA MASA : 2 ½ JAM  
ARAHAN : JAWAB SEMUA SOALAN DI  
BAHAGIAN A.  
DAN JAWAB EMPAT(4)  
SOALAN SAHAJA DI  
BAHAGIAN B

KERTAS SOALAN INI MENGANDUNGI SEMBILAN (9) MUKA SURAT

**SOALAN DI DALAM BAHASA MELAYU**

**BAHAGIAN A**

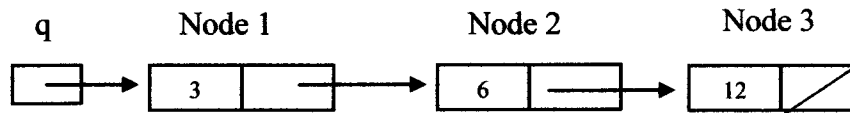
**ARAHAN: JAWAB SEMUA SOALAN**

- S1** Terangkan struktur data di dalam pengaturcaraan C++.  
(3 markah)
- S2** Senaraikan 2 (DUA) kebaikan carian linear dan 1 (SATU) keburukan carian linear.  
(3 markah)
- S3** (a) Terangkan penuding.  
(b) Berikan contoh pengistiharaan penuding.  
(4 markah)
- S4** Jelaskan tatasusunan dengan menggunakan contoh.  
(5 markah)
- S5** Senaraikan 3 (TIGA) jenis data struktur linear dan 2 (DUA) jenis data struktur tidak linear.  
(5 markah)

**BAHAGIAN B**

**ARAHAN: JAWAB 4 (EMPAT) SOALAN SAHAJA**

**S6 (a)**



Jelaskan maksud kod berikut:

(i). q (2 markah)

(ii). q - > data (2 markah)

(iii). q - > next (2 markah)

(iv). q - > next - > data (2 markah)

(v). q - > next - > next (2 markah)

(vi). q - > next - >next - >next (2 markah)

b Tafsirkan keratan kod bagi Aturcara 1 dengan bantuan gambarajah yang sesuai.

```

for (int i = 3 i < = n; i ++ ) {
    ptr = new Node;
    ptr - > data = i;
    ptr - > next = NULL;
    lastNodePtr - > next = ptr;
    lastNodePtr = ptr;
}

```

Aturcara 1

**(8 markah)**

S7 (a) Tuliskan algoritma bagi carian jujukan.  
(10 markah)

(b) Pertimbangkan senarai nombor :

5 12 34 52 67 23 67 13 24 45 78 35 68 90 4

Tunjukkan setiap fasa untuk mencari nombor 78 dengan menggunakan teknik carian *binary search*.

(10 markah)

S8 (a) Tafsirkan keratan kod baris gilir bagi Aturcara 2 dengan bantuan gambarajah yang sesuai.

```
{
    if ( front == back )
        return false;
    Node<DataType> *ptr = front->next;
    deqElement = ptr->info;
    front->next = ptr->next;
    if ( back == ptr )
        back = front;
        delete ptr;
    return true;
}
```

Aturcara 2

(10 markah)

(b) Pertimbangkan senarai nombor :

99 55 4 66 28 31 36 52 38 72

Tunjukkan fasa-fasa isihan jenis selitan ke atas senarai tersebut.

(10 markah)

S9 (a) Senarai input: 14 15 4 9 7 18 3 5 16 4 20 17 9 14 5  
Bina pepohon dedua berpandukan senarai input yang diberikan.

(15 markah)

- (b) Berpandukan pepohon dedua yang telah dibina. Nyatakan:
- i. Akar
  - ii. Cabang kanan
  - iii. Kedalaman pepohon
  - iv. Panjang akar ke dedaun cabang kiri.
  - v. Iubapa kepada 5

(5 markah)

- S10** (a) Tuliskan kod pengaturcaraan bagi kelas pohon dedua.

(10 markah)

- (b) Tuliskan kod pengaturcaraan bagi fungsi inorder untuk kelas pohon dedua.

(5 markah)

- (c) Tuliskan kod pengaturcaraan bagi fungsi postorder untuk kelas pohon dedua.

(5 markah)

**SOALAN DI DALAM BAHASA INGGERIS**

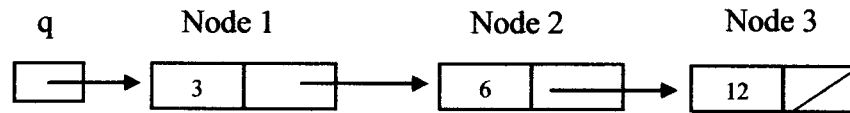
**SECTION A (Instruction: Answer ALL questions.)**

- Q1** Describe the data structure in C + + programming.  
(3 marks)
- Q2** List 2 (**TWO**) advantages of linear search and 1 (**ONE**) disadvantages of linear search.  
(3 marks)
- Q3** Explain pointer. Give an example of pointer declarations.  
(4 marks)
- Q4** Explain arrays using examples.  
(5 marks)
- Q5** List 3 (**THREE**) types of linear data structures and 2 (**TWO**) types of non-linear data structure.  
(5 marks)

**SECTION B**

Instruction: Answer 4 (FOUR) questions only

**Q6 (a)**



Explain the coding by referring linked list figure:

(i). q (2 marks)

(ii). q -> data (2 marks)

(iii). q -> next (2 marks)

(iv). q -> next -> data (2 marks)

(v). q -> next -> next (2 marks)

(vi). q -> next ->next ->next (2 marks)

(b) Interpret the part of the Program 1 with the help of suitable diagram.

```

for (int i = 3 i < = n; i ++ )
{
    ptr = new Node;
    ptr -> data = i;
    ptr -> next = NULL;
    lastNodePtr -> next = ptr;
    lastNodePtr = ptr;
}
  
```

Program 1

(8 marks)

**Q7** (a) Write the algorithm for linear search. (10 marks)

(b) Consider the list:

5 12 34 52 67 23 67 13 24 45 78 35 68 90 4

Show each phase to find number 78 using binary search techniques.

(10 marks)

**Q8** (a) Interpret part of programming code of queue for Program 2 with the help of suitable diagram.

```
{
  if ( front == back )
    return false;
  Node<DataType> *ptr = front->next;
  deqElement = ptr->info;
  front->next = ptr->next;
  if ( back == ptr )
    back = front;
    delete ptr;
  return true;
}
```

Program 2

(10 marks)

(b) Consider list of numbers: 99 55 4 66 28 31 36 52 38 72

Show the sorting phases of insertion sort on the list.

(10 marks)

**Q9** (a) Input list: 15 15 5 9 7 18 3 6 16 4 20 17 10 14 6

Construct a binary tree based on the given input list.

(15 marks)



- (b) Based on binary trees that have been built,  
state:
- i. Root
  - ii. Right Sub tree
  - iii. Depth
  - iv. Length from Root to end of left sub tree.
  - v. Parent of 5

(5 marks)

- Q10** (a) Write C++ programming code for binary tree class.

(10 marks)

- (b) Write C++ programming code for inorder function of binary tree class.

(5 marks)

- (c) Write C++ programming code for postorder function of binary tree class.

(5 marks)

- END OF QUESTION -