UNIVERSITI TUN HUSSEIN ONN MALAYSIA

PEPERIKSAAN AKHIR
SEMESTER I
SESI 2009/2010

NAMA MATA PELAJARAN	:	PENGATURCARAAN KOMPUTER
KOD MATA PELAJARAN	:	DEE 2112
KURSUS	:	2 DEE/DET
TARIKH PEPERIKSAAN	:	NOVEMBER 2009
JANGKAMASA	:	2 JAM
ARAHAN	:	JAWAB **SEMUA** SOALAN DALAM BAHAGIAN A SERTA **SATU (1)** SOALAN SAHAJA DALAM BAHAGIAN B.

KERTAS SOALAN INI MENGANDUNGI SEBELAS (11) MUKA SURAT

SOALAN DALAM BAHASA INGGERIS

PART A: STRUCTURES (70 MARKS)
Instruction: Answer ALL questions.

Q1 In each of the following C statements, find the syntax error and write the correct code.

(a) cost + profit = price;

(2 marks)

(b) current_balance == previous_balance + deposit;

(2 marks)

(c) scanf("%d", age);

(2 marks)

(d) printf ("The result is %d", result)

(2 marks)

(e) a = (b+c) \ 2;

(2 marks)

Q2 (a) If originally x = 1, y = 3, and z = 0, what is the value of x, y and z after executing the following code?

```
switch (x)
{       case 0:
                x = 2;
                y = 3;
        case 1:
                x = 4;
        default:
                y = 1;
                x = 1;
}
```

(5 marks)

(b) Rewrite the following program segment, using a *switch...case* statement

```
if ((x = = 1) || (x = = 2))
        y = x * 1000;
else if (x = = 3)
        y = x * 2000;
else
        y = x * 3000;
```

(5 marks)

Q3 (a) During execution of the following program segment, discover how many stars (*) are displays?

```
for (i = 0 ; i < 10 ; ++i)
        for (j = 0 ; j  < 5 ; j++)
            printf("*");
```

(5 marks)

(b) Rewrite the following program segment, using a *while* loop

```
for (count = 0, i = 0; i < n ; ++i)
{
        scanf("%d", &x);
        if ( x = = i)
            ++count;
}
```

(5 marks)

Q4 (a) What is the output of the following source code?

```
#include<stdio.h>
#include<math.h>
float calculate2(int y, int z);
float calculate1(int w, int x)
{
        float n = calculate2(w += 12, x *=2);
        printf("%.2f\t", sqrt(n + x));
        return n;
}
void main()
{
        float answer;
        int a = 36, b = 6;
        answer = calculate1(a,b);
        printf("%.2f\t",answer);
}
float calculate2(int y, int z)
{
        float m = sqrt(pow(y /=2, z -= 10));
        printf("%.2f\t", pow(m,z));
        return m;
}
```

(5 marks)

(b) Write a user-defined function code for the following statement.

A function called *maximum* accepts two floating point numbers then display the maximum number and returns that value.

(5 marks)

Q5 (a) What is the output of the following segment code?

```
int x[8]={2,3,4,5,6,7,8}, i = 0;

while(i < 5) {
    printf("\n %d : %d", i+1, x[i] * 2);
    i++;
}
```

(4 marks)

(b) State whether the following statements are true or false. If the answer is false, explain why.

(i) An array can store many different types of values.
(ii) An array subscript should normally be float data type.
(iii) It is an error if an initializer list contains more initializers than size of array.

(6 marks)

Q6 Write C statements to do the following:

(a) Define a structure called *Diploma* which consists of three data members: program code, number of students and total subjects.

(3 marks)

(b) Declare *Prgm1* as variable of type Diploma.

(1 mark)

(c) Assign the following values for the specific data members :

Program Code : DET
Number of Students : 40
Total Subject : 35

(3 marks)

(d) Display all the details about *Prgm1*. Your running program should at least meet the following output.

```
Program 1
*************************
Program Code : DET
Number of Students : 40
Total Subject : 35
```

(3 marks)

Q7 (a) Draw the graphical representation of a pointer in memory based on the following segment code.

```
int y = 5, x = 3;
int *yPtr, *xPtr;
yPtr=&x;
xPtr=&y;
*yPtr = y + x;
```

(4 marks)

(b) Complete the following program by writing suitable C statements that can read values a, b, and c from sample.dat and display all values to the screen.

```
#include <stdio.h>

void main()
{
        FILE *fpt;
        int a;
        float b;
        char c;

        fpt = fopen("sample.dat","r");
        ..... //(i) read values of variable a, b and c
        ..... //(ii) dispaly all values of a, b and c

        ..... //(iii) close a file
}
```

(6 marks)

PART B: PROBLEM SOLVING (30 MARKS)
Instruction: Answer ONE question only.

Q8 Create a flowchart / pseudocode and write a source code to calculate and display *the area of circle* and *the volume of sphere*. Use the following formulas:

Area of circle = πr^2

Volume of sphere = $\frac{4}{3}\pi r^3$

The program must have the function *calculate_area()* and *calculate_volume()* to solve this problem.

(30 marks)

Q9 Given the two-dimensional integer array x[3][5], with following initial values,

10 20 -2 0 34 -12 7 9 10 -5 0 -7 -9 10 0

Create a flowchart / pseudocode and write a source code to find how many of its elements are negative value, positive value or zero value.

(30 marks)

SOALAN DALAM BAHASA MALAYSIA

BAHAGIAN A: STRUKTUR (70 MARKAH)
Arahan: Jawab SEMUA soalan.

S1 Kenalpasti ralat sintaks bagi setiap kenyataan C berikut dan tuliskan semula kod yang benar.

(a) cost + profit = price;

(2 markah)

(b) current_balance == previous_balance + deposit;

(2 markah)

(c) scanf("%d", age);

(2 markah)

(d) printf ("The result is %d", result)

(2 markah)

(e) a = (b+c) \ 2;

(2 markah)

S2 (a) Sekiranya nilai asal x = 1, y = 3, dan z = 0, apakah nilai x, y dan z selepas aturcara berikut dilaksanakan?

```
switch (x)
{       case 0:
                x = 2;
                y = 3;
        case 1:
                x = 4;
        default:
                y = 1;
                x = 1;
}
```

(5 markah)

(b) Tuliskan semula segmen program berikut menggunakan kenyataan *switch...case*.

```
if ((x = = 1) || (x = = 2))
        y = x * 1000;
else if (x = = 3)
        y = x * 2000;
else
   y = x * 3000;
```

(5 markah)

S3 (a) Semasa pelaksanaan segmen program berikut, berapakah banyak bintang (*) akan dipaparkan?

```
for (i = 0 ; i < 10 ; ++i)
        for (j = 0 ; j  < 5 ; j++)
            printf("*");
```

(5 markah)

(b) Tuliskan semula segmen program berikut menggunakan gelung *while*.

```
for (count = 0, i = 0; i < n ; ++i)
{
        scanf("%d", &x);
        if ( x = = i)
            ++count;
}
```

(5 markah)

S4 (a) Apakah output bagi kod aturcara berikut?

```
#include<stdio.h>
#include<math.h>
float calculate2(int y, int z);
float calculate1(int w, int x)
{
        float n = calculate2(w += 12, x *=2);
        printf("%.2f\t", sqrt(n + x));
        return n;
}
void main()
{
        float answer;
        int a = 36, b = 6;
        answer = calculate1(a,b);
        printf("%.2f\t",answer);
}
float calculate2(int y, int z)
{
        float m = sqrt(pow(y /=2, z -= 10));
        printf("%.2f\t", pow(m,z));
        return m;
}
```

(5 markah)

(b) Tuliskan definisi fungsi bagi penyataan berikut:

Fungsi yang diberi nama *maximum* menerima dua nombor perpuluhan, serta memapar dan memulangkan nombor maksimum tersebut.

(5 markah)

S5 (a) Apakah output bagi segmen kod berikut?

```
int x[8]={2,3,4,5,6,7,8}, i = 0;

while(i < 5) {
      printf("\n %d : %d", i+1, x[i] * 2);
      i++;
}
```

(4 markah)

(b) Nyatakan samada penyataan berikut benar atau salah. Sekiranya jawapannya adalah salah, sila berikan penjelasan.

(i) Tatasusunan boleh menyimpan pelbagai jenis data yang berbeza jenisnya.
(ii) Indeks bagi tatasusunan mestilah data berjenis titik perpuluhan.
(iii) Ralat akan berlaku sekiranya senarai nilai awal bagi tatasusunan melebihi saiz tatasusunan.

(6 markah)

S6 Tuliskan penyataan C untuk melaksanakan perkara berikut:

(a) Definisikan struktur *Diploma* yang mengandungi tiga ahli: kod program, bilangan pelajar dan jumlah subjek.

(3 markah)

(b) Isytiharkan *Prgm1* sebagai pembolehubah berjenis struktur Diploma

(1 markah)

(c) Umpukkan nilai berikut kepada ahli struktur yang tertentu:

Kod Program : DET
Bilangan Pelajar : 40
Jumlah subjek : 35

(3 markah)

(d) Paparkan semua maklumat terperinci *Prgm1*. Output pelaksanaan program sekurang-kurangnya seperti berikut:

```
Program 1
**************************
Program Code : DET
Number of Students : 40
Total Subject : 35
```

(3 markah)

S7 (a) Lukiskan gambarajah yang menggambarkan penunjuk di dalam ingatan berdasarkan segmen aturcara berikut:

```
int y = 5, x = 3;
int *yPtr, *xPtr;
yPtr=&x;
xPtr=&y;
*yPtr = y + x;
```

(4 markah)

(b) Lengkapkan program berikut dengan menulis kenyataan C yang bersesuaian bagi membaca nilai a, b, dan c daripada fail "sample.dat" dan paparkan semua nilai di skrin.

```
#include <stdio.h>

void main()
{
        FILE *fpt;
        int a;
        float b;
        char c;

        fpt = fopen("sample.dat","r");
        .....       //(i) baca nilai pembolehubah a, b dan c
        .....       //(ii) paparkan semua nilai a, b dan c

        .....       //(iii) tutup fail
}
```

(6 markah)

BAHAGIAN B: PENYELESAIAN MASALAH (30 MARKAH)
Arahan: Jawab SATU soalan sahaja.

S8 Bina carta alir / kod pseudo dan tuliskan aturcara untuk mengira dan memaparkan *luas bulatan* dan *isipadu sfera*. Gunakan formula berikut:

$$\text{Luas bulatan} = \pi j^2$$

$$\text{Isipadu sfera} = \frac{4}{3}\pi j^3$$

Aturcara mesti mempunyai fungsi *kira_luas()* dan *kira_isipadu()* untuk menyelesaikan masalah ini.

(30 markah)

S9 Diberi tatasusunan dua dimensi x[3][5], dengan nilai awal berikut:

10 20 -2 0 34 -12 7 9 10 -5 0 -7 -9 10 0

Bina carta alir / kod pseudo dan tuliskan aturcara untuk mengira bilangan nombor negatif, bilangan nombor positif dan bilangan nombor sifar daripada elemen tatasusunan berkenaan.

(30 markah)