



# **UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

## **FINAL EXAMINATION SEMESTER I SESSION 2009/2010**

**SUBJECT NAME** : **COMPUTER PROGRAMMING**  
**SUBJECT CODE** : **BIT 1033**  
**COURSE** : **1 BIT**  
**DATE** : **NOVEMBER 2009**  
**DURATION** : **2 HOURS AND 30 MINUTES**  
**INSTRUCTION** : **ANSWER ALL QUESTIONS.**

**THIS PAPER CONTAINS FIFTEEN (15) PAGES**

**PART A**

Instruction: Answer **ALL** questions.

**Q1** Which of the following are valid identifiers?

- i. R3D3
- ii. per-capita
- iii. phone#
- iv. ice\_cream
- v. 92\_aardvarks

- A. i, ii, iv, v
- B. i, iv
- C. i, ii
- D. ii, iv, v

**Q2** Text enclosed in `/* */` in a C program \_\_\_\_\_.

- A. gives instructions to the processor
- B. declares memory requirements
- C. makes files available
- D. is ignored by the C compiler

**Q3** A C compiler detects \_\_\_\_\_.

- A. syntax errors
- B. run-time errors
- C. result errors
- D. all of the above

**Q4** Which one of these is **NOT** the name of a C library function?

- A. printf
- B. sqrt
- C. void
- D. scanf

- Q5 A program that uses prompting messages to direct the user's input is running in \_\_\_\_\_.
- A. batch mode
  - B. arithmetic/logic mode
  - C. interactive mode
  - D. assembly language mode
- Q6 Which of the following statements calls function `abc()`?
- A. `call abc;`
  - B. `abc;`
  - C. `p = abc(q);`
  - D. `void abc(void);`
- Q7 Which one of the following expressions does **NOT** evaluate to 3?
- A.  $2 + 16 \% 5$
  - B.  $7 - 15 / 4$
  - C.  $6 * 5 / 10$
  - D.  $2 - 4 * 3 + 26 / 2$
- Q8 Which of the types listed below can be the type of the result value returned by a user-defined function?
- A. `int`
  - B. `double`
  - C. `char`
  - D. all of the above
- Q9 The expression `x *= i + j / y;` is equivalent to \_\_\_\_\_.
- A. `x = x * i + j / y;`
  - B. `x = (x * i) + j / y;`
  - C. `x = (x * i + j) / y;`
  - D. `x = x * (i + j / y);`

**Q10** How many lines of output will be displayed by the following program fragment?

```
i = 0
do {
    for (j = 0; j < 4; j = j + 1)
        printf("%d\n", i + j);
    i = i + 1;
} while (i < 5);
```

- A. 7
- B. 9
- C. 16
- D. 20

(10 marks)

**PART B**

Instruction: Answer **ALL** questions.

**Q11** Rewrite the `switch` statement below as a multilevel `if` statement.

```
switch (jersey)
{
    case 11:
        printf("Ahmad\n");
        break;

    case 23:
        printf("Najib\n");
        break;

    case 33:
        printf("Razak\n");
        break;

    default:
        printf("Player unknown\n");
}
```

(5 marks)

**Q12** Rewrite the following code segment by using `for` statement.

```
product = 1;
next = 1;
while (next <= m) {
    product = product * next;
    next = next + 1;
}
```

(5 marks)

**Q13** Trace output for the following segment codes:

(a) What will be the value of `x` after the C statements have been executed?

i.

```
x = 3;
j = 10;
if ((3 * x) < j)
    x = x + 2;
x = x + 3;
```

(2 marks)

i.

```
x = 1, y = 1;
while(y <= 5) {
    x = x * y;
    printf("%d\t%d\n", y, x);
    y++;
}
```

(5 marks)

```

iii. #include <stdio.h>

int func2(int count);

main()
{
    int x, count;
    for (count=1;count <=5; count++)
    {
        x = func2(count);
        printf("%d\n",x);
    }
}
int func2(int x)
{
    int y;
    y = x * x;
    return(y);
}

```

(5 marks)

(b) Given the following data declaration:

```

float a = 8.0, b = 4.6, c;
int x = 10, y = 20, z;

```

What values generated by the following expressions?

- i.  $z = x \% y + 2$
- ii.  $c = y / a * 4 / x + 2$

(4 marks)

(c) Given the following function:

```

int funC(int x, int y, char z)
{
    int n = 0, i;
    switch( z )
    {
        case '+' : for(i = x; i <= y; i++)
                    n+=y;
                    return n;
        case '*' : for(i = x; i <= y; i++)
                    n*=y;
                    return n;
    }
}

```

For each of the following statement, what are the values for val?

- i.  $val = funC(6, 9, '+');$
- ii.  $val = funC(1, 3, '*');$

(4 marks)

**Q14** Write the expression of C language which is equivalent with the following mathematical expressions:

(a)  $y = mx + c$

(2 marks)

(b)  $\frac{(3e - d)}{x - 9} - \frac{(4 - 3c^3)}{4y}$

(4 marks)

**Q15** Fill in the **Table 1** with the correct answer.

**Table 1: Identifier Declaration**

	Data Type	Declaration
Number of students in the class		
Average mark for all students		
Grade a student that only have a character		
Number of days in a week		
Number of months in a year		

(5 marks)

**Q16** Based on the following code segment, draw and state the value of array *c* starting from *c*[0] till *c*[4].

```
#include<conio.h>
#include<stdio.h>

void main()
{
    int a[]={4,7,8,2,5};
    int b[]={1,2,3,4,5};
    int c[5],i;

    int j=4;
    for(i=0;i<5;i++)
    {
        c[j]=a[i]*b[j];
        printf("\n%d",c[j]);
        j--;
    }
    getch();
}
```

(5 marks)

**Q17** Write a segment code to display the following output.

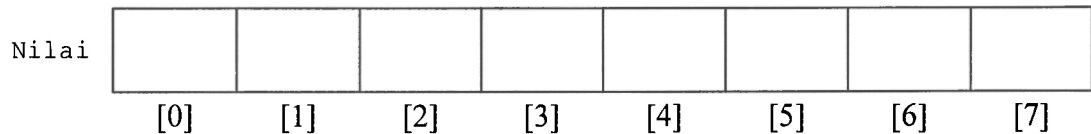
```
5 4 3 2 1
4 3 2 1
3 2 1
2 1
1
```

(4 marks)

**Q18** Based on the following array declaration,

```
int Nilai[8] = { 4, 6, 8, 7, 3, 10, 9, 1};
```

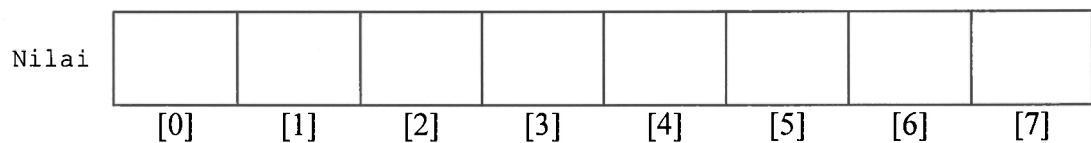
(a) fill in suitable value in the memory location provided.



(2 marks)

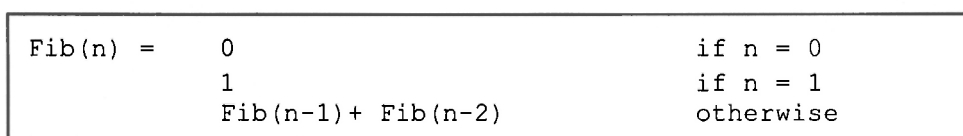
(b) If  $x = 2$  and  $y = 3$ , evaluate and state the output of the following equations:  
(Assume that each of the operations is non contiguous).

- i.  $\text{Nilai}[x + 3] = \text{Nilai}[7] ;$
- ii.  $\text{Nilai}[6] = \text{Nilai}[2 * x] + y;$
- iii.  $\text{Nilai}[y] = \text{Nilai}[6] + \text{Nilai}[4 / x] ;$
- iv.  $\text{Nilai}[0] = x * \text{Nilai}[3];$



(8 marks)

**Q19** Write a program that will read integer between 0 to 5 from user. The program will use the input to determine the fibonacci value. Error message will be displayed if the input entered is not in the range of 0 to 5. You need to use a recursive fibonacci function to calculate the fibonacci value. The prototype of this function is `int fibonacci(int n)` whereby  $n$  is the input entered by user during program runtime. The output of the fibonacci  $n$  will be displayed in `main()` function.



**Figure Q19: Fibonacci Formula**

(10 marks)



**BAHAGIAN A**Arahan: Jawab **SEMUA** soalan.**S1** Manakah antara berikut adalah pencam yang sah?

- i. R3D3
- ii. per-capita
- iii. phone#
- iv. ice\_cream
- v. 92\_aardvarks

- A. i, ii, iv, v
- B. i, iv
- C. i, ii
- D. ii, iv, v

**S2** Teks yang terdapat di dalam /\* \*/ dalam program C \_\_\_\_\_.

- A. memberi arahan kepada pemproses
- B. mentakrifkan keperluan memori
- C. mewujudkan fail
- D. diabaikan oleh pengkompil C

**S3** Pengkompil C mengesan \_\_\_\_\_.

- A. ralat sintaks
- B. ralat masa-larian
- C. ralat keputusan
- D. semua di atas

**S4** Manakah antara berikut yang **BUKAN** nama bagi fungsi perpustakaan C?

- A. printf
- B. sqrt
- C. void
- D. scanf

- S5 Aturcara yang menggunakan mesej *prompt* untuk mengarahkan input oleh pengguna dilaksanakan di dalam \_\_\_\_\_.
- A. mod berkelompok
  - B. mod arithmetik/logik
  - C. mod interaktif
  - D. mod bahasa himpunan
- S6 Manakah antara pernyataan berikut yang memanggil fungsi `abc`?
- A. `call abc;`
  - B. `abc;`
  - C. `p = abc(q);`
  - D. `void abc(void);`
- S7 Manakah antara ungkapan berikut yang **TIDAK** menghasilkan nilai 3?
- A.  $2 + 16 \% 5$
  - B.  $7 - 15 / 4$
  - C.  $6 * 5 / 10$
  - D.  $2 - 4 * 3 + 26 / 2$
- S8 Manakah antara berikut boleh menjadi jenis data bagi nilai hasil yang dipulangkan oleh fungsi pengisytiharan-pengguna?
- A. `int`
  - B. `double`
  - C. `char`
  - D. semua di atas
- S9 Ungkapan `x *= i + j / y;` adalah setara dengan \_\_\_\_\_.
- A. `x = x * i + j / y;`
  - B. `x = (x * i) + j / y;`
  - C. `x = (x * i + j) / y;`
  - D. `x = x * (i + j / y);`

S10 Berapakah jumlah baris output yang akan dipaparkan oleh keratan aturcara berikut?

```
i = 0
do {
  for (j = 0; j < 4; j = j + 1)
    printf("%d\n", i + j);
  i = i + 1;
} while (i < 5);
```

- A. 7
- B. 9
- C. 16
- D. 20

(10 markah)

**BAHAGIAN B**Arahan: Jawab **SEMUA** soalan.**S11** Tulis semula pernyataan `switch` di bawah menggunakan pernyataan *multilevel if*.

```

switch (jersey)
{
    case 11:
        printf("Ahmad\n");
        break;

    case 23:
        printf("Najib\n");
        break;

    case 33:
        printf("Razak\n");
        break;

    default:
        printf("Player unknown\n");
}

```

(5 markah)

**S12** Tulis semula keratan kod berikut yang setara dengan menggunakan pernyataan `for`.

```

product = 1;
next = 1;
while (next <= m) {
    product = product * next;
    next = next + 1;
}

```

(5 markah)

**S13** Kenalpasti output bagi setiap keratan kod berikut:(a) Apakah nilai `x` apabila pernyataan C berikut dilaksanakan?

```

i.    x = 3;
       j = 10;
       if ((3 * x) < j)
           x = x + 2;
       x = x + 3;

```

(2 markah)

```

ii.   x = 1, y = 1;
       while(y <= 5) {
           x = x * y;
           printf("%d\t%d\n", y, x);
           y++;
       }

```

(5 markah)

```

iii. #include <stdio.h>

int func2(int count);

main()
{
    int x, count;
    for (count=1;count <=5; count++)
    {
        x = func2(count);
        printf("%d\n",x);
    }
}
int func2(int x)
{
    int y;
    y = x * x;
    return(y);
}

```

(5 markah)

(b) Diberi pengisytiharan data berikut:s

```

float a = 8.0, b = 4.6, c;
int x = 10, y = 20, z;

```

Apakah nilai yang dijana dari ungkapan berikut?

- i.  $z = x \% y + 2$
- ii.  $c = y / a * 4 / x + 2$

(4 markah)

(c) Diberi fungsi berikut:

```

int funC(int x, int y, char z)
{
    int n =0, i;
    switch( z )
    {
        case '+' : for(i = x; i <= y; i++)
                    n+=y;
                    return n;
        case '*' : for(i = x; i <= y; i++)
                    n*=y;
                    return n;
    }
}

```

Bagi setiap pernyataan berikut, apakah nilai bagi val?

- i.  $val = funC(6, 9, '+')$ ;
- ii.  $val = funC(1, 3, '*')$ ;

(4 markah)

S14 Tuliskan ungkapan bahasa C yang setara bagi ungkapan matematik berikut:

(a)  $y = mx + c$

(2 markah)

(b)  $\frac{(3e - d)}{x - 9} - \frac{(4 - 3c^3)}{4y}$

(4 markah)

S15 Penuhkan **Jadual 1** dengan jawapan yang betul.

**Jadual 1: Pengisytiharan Pencam**

	Jenis Data	Pengisytiharan
Bilangan pelajar di dalam sebuah kelas		
Purata markah semua pelajar		
Gred seorang pelajar yang terdiri dari satu huruf sahaja		
Bilangan hari dalam seminggu		
Bilangan bulan dalam setahun		

(5 markah)

S16 Berdasarkan aturcara di bawah, lukis dan nyatakan nilai pembolehubah tatasusunan bermula  $c[0]$  hingga  $c[4]$

```
#include<conio.h>
#include<stdio.h>

void main()
{
    int a[]={4,7,8,2,5};
    int b[]={1,2,3,4,5};
    int c[5],i;

    int j=4;
    for(i=0;i<5;i++)
    {
        c[j]=a[i]*b[j];
        printf("\n%d",c[j]);
        j--;
    }
    getch();
}
```

(5 markah)

S17 Tuliskan aturcara C untuk memaparkan output seperti berikut.

```

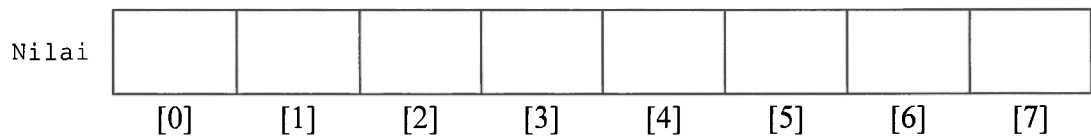
5 4 3 2 1
4 3 2 1
3 2 1
2 1
1
    
```

(4 markah)

S18 Berdasarkan pengisytiharan tatasusunan berikut,

```
int Nilai[8] = { 4, 6, 8, 7, 3, 10, 9, 1};
```

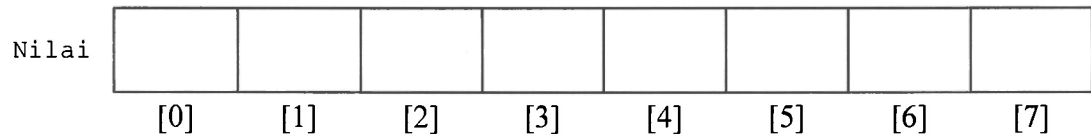
(a) isikan nilai yang sesuai di dalam lokasi memori yang diberi.



(2 markah)

(b) jika  $x = 2$  dan  $y = 3$ , nilaikan dan nyatakan output bagi persamaan berikut: (Andaikan setiap operasi tidak berkaitan antara satu sama lain).

- i.  $\text{Nilai}[x + 3] = \text{Nilai}[7] ;$
- ii.  $\text{Nilai}[6] = \text{Nilai}[2 * x] + y;$
- iii.  $\text{Nilai}[y] = \text{Nilai}[6] + \text{Nilai}[4 / x] ;$
- iv.  $\text{Nilai}[0] = x * \text{Nilai}[3];$



(8 markah)

S19 Tuliskan satu aturcara yang membaca nilai integer antara 0 hingga 5 daripada pengguna. Program tersebut akan menggunakan input tersebut untuk menentukan nilai fibonacci. Mesej ralat akan dipaparkan sekiranya input yang dimasukkan bukan antara 0 hingga 5. Anda perlu menggunakan fungsi fibonacci rekursif untuk mengira nilai fibonacci. Prototaip bagi fungsi ini ialah `fibonacci(int n)` dimana  $n$  ialah input yang dimasukkan oleh pengguna semasa masa larian aturcara. Output bagi fibonacci  $n$  akan dipaparkan di dalam fungsi `main()`.

<pre> Fib(n) = 0           1           Fib(n-1)+ Fib(n-2)         </pre>	<pre> if n = 0 if n = 1 otherwise         </pre>
--	--

**Rajah S19: Formula Fibonacci**

(10 markah)