



# **UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

## **PEPERIKSAAN AKHIR SEMESTER II SESI 2008/2009**

**NAMA MATA PELAJARAN : PENGATURCARAAN KOMPUTER**

**KOD MATA PELAJARAN : BEE 1212**

**KURSUS : BEE**

**TARIKH PEPERIKSAAN : APRIL 2009**

**JANGKA MASA : 2 JAM 30 MINIT**

**ARAHAN : JAWAB SEMUA SOALAN PADA  
BAHAGIAN A DAN SATU (1)  
SOALAN PADA BAHAGIAN B**

**KERTAS SOALAN INI MENGANDUNGI SEBELAS (11) MUKA SURAT**

**PART A: STRUCTURES (80 MARKS)****Instruction: Answer ALL questions.**

- Q1** (a) Reproduce the following source code in a graphical notation form.

```
#include <stdio.h>
#define STUDENTS 5
void main ( )
{
    int i, sum = 0, marks[STUDENTS];
    float avg;

    for (i = 0; i < STUDENTS; i++)
        sum += marks[i];

    avg=sum/STUDENTS;
}
```

(5 marks)

- (b) Run-time error is one of the programming error types.

(i) Explain briefly about this type of error, and

(2 marks)

(ii) Give an example of this error.

(1 mark)

- Q2** (a) List three (3) conversion specifiers and three (3) logical operators in C programming code.

(3 marks)

- (b) Translate the following formula into C code.

$$\sqrt{\frac{x^2 + y^2}{x^2 + 1}} \quad \text{and} \quad \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

(3 marks)

- (c) Analyse the following code, then write the errors and the correct code.

```
#include<stdio.h>
#define PI 3.14159
int main (void)
{
    double c, r;
    scanf("%0lf%lf", c, r);
    PI = c / (2 * r);
    return 0;
}
```

(2 marks)

- Q3** (a) List four (4) types of selection structures. (2 marks)

- (b) Translate the following statement to the most suitable selection structure code.

Calculate  $a += b$  when  $a$  is greater than  $b$ , calculate  $b -= a$  when  $b$  is greater than  $a$ , and display  $a$  is equal with  $b$  when  $a$  and  $b$  is equal.

(3 marks)

- (c) Analyse the following code and write the output.

```
#include <stdio.h>
void main()
{
    int a=4, b=9, c=b-a, d=a, e;
    switch(d)
    {
        case 4:    a=a++;
                  printf("Value a: %d", a);
        case 5:    b=b++;
                  printf("\nValue b: %d", b);
        case 6:    c=++b + a--;
                  printf("\nValue c: %d", c);
        case 7:    d=b++ - --c;
                  printf("\nValue d: %d", d);
        case 8:    e=d++ - --b;
                  printf("\nValue e: %d", e);
        default:  printf("\nValue f: %d\n", d);
    }
}
```

(3 marks)

**Q4** Answer (a) to (c) based on below fragment code:

```
sum = 0;

for (k=1; k<=10; k++)
{
    if (k == 5)
        break;
    else
        sum+=k;

    printf("Sum [%d]= %d\n", k, sum);
}
```

- (a) Rewrite the above code using *while* statement and still producing the same output as *for* statement. (3 marks)
- (b) Analyse on how repetition structure in Q4 (a) produced the output. (3 marks)
- (c) Propose the most suitable repetition structure that could be used for the following description. Give a reason.

Design a program that will repeatedly accept marks as input until the word END is entered.

(2 marks)

- Q5** (a) Translate the following statement to function prototype in C code.
- (i) A function called *root* accepts two integers argument and returns a floating-point value. (1 mark)
  - (ii) A function called *transfer* accepts a long integer and returns a character. (1 mark)
  - (iii) A function called *results* receives two float values and prints the multiplication of those values. (1 mark)

- (b) Answer (i) to (iii) based on analysis of the following code.

```
#include<stdio.h>
int func1(int x);
main( )
{
    int a, count;
    for (count = 1; count <= 4; count = count + 1) {
        a = func1(count);
        printf("%d ", a);
    }
}
int func1(int x)
{
    int y;
    y = x * x;
    return (y);
}
```

- (i) Rewrite  $y=x*x$  using standard math library function. (1 mark)
  - (ii) Write the output. (1 mark)
  - (iii) What is the type of function call used in the above code? Give a reason. (1 mark)
- (c) Modify the function code in Q5 (b) to become a function that not returns any value and display the value of  $y$ . (2 marks)

- Q6 (a) Illustrate the *Bubble Sort* diagram to arrange the following numbers in ascending order.

43    11    22

(3 marks)

- (b) Analyse the following code and write the output.

```
#include<stdio.h>
void main()
{
    int list[6], i;

    for (i = 0; i<10; i++)
    {
        list[i] = 2 * i + 5;
        if (i%2 == 0)
            list[i] = list[i] - 3;
        printf("%d\n",list[i]);
    }
}
```

(3 marks)

- (c) Establish a declaration and initialization of two dimensional arrays for variable *list* which has 2 rows and 3 columns by using the output that was produced by the source code in question Q6 (b).

(2 marks)

- Q7 (a) Illustrate the memory diagram of array *text1* and *text2* after executes each line of below code.

```
char text1[ ]="Johor", text2[]="Malaysia";
strcpy(text1, text2);
```

(3 marks)

- (b) Use appropriate string functions to write a complete C code in order to produce the following output.

```
Enter your message: _____
Your message is ___ characters long.
```

example output:

```
Enter your message: Good luck for final exam
Your message is 24 characters long.
```

(5 marks)

- Q8 (a) Based on the following source code and output, draw the pointer diagram to illustrate the relationship of all variables. (Assume address of *pu* is *Ec7* and *pv* is *Ec5*).

```
#include <stdio.h>
void main ()
{
    int u = 3;
    int v;
    int *pu;
    int *pv;

    pu = &u;
    v = *pu;
    pv = &v;

    printf("\nu=%d &u=%p pu=%p *pu=%d", u, &u, pu, *pu);
    printf("\n\nv=%d &v=%p pv=%p *pv=%d", v, &v, pv, *pv);
}
```

The output of the program is as follows:

```
u=3  &u=F8E    pu=F8E    *pu=3
v=3  &v=F8C    pv=F8C    *pv=3
```

(3 marks)

- (b) Answer (i) and (ii) based on implementation of the following fragment code.

```
main ()
{
    int list[9] = {1,2,3,4,5,6,7,8,9}, i;
    int *listptr;

    listptr = &list[0];

    for(i=0;i<7;i++)
        *listptr = *(listptr + i);
    ....
}
```

- (i) What is the current element of array point by *listptr* after execute the *for* loop? And explain how it was produced?  
(2 marks)
- (ii) Assume that the memory address of first element of *list[0]* is 4000 and each cell contains a 4 byte ints. What is the memory address of location of pointer *listptr* after perform the *for* loop? Solve it and prove your answer.  
(3 marks)

- Q9 (a) Translate the following statement to the C code.

Declare a structure named *personal budget* that contains five (5) members: an integer *accountno*, an 80-elements character array *expensesname*, a float *credit*, a struct *date expenses*, and a float *accbalance*.

(3 marks)

- (b) Construct a fragment of C code by using structure that produces the following output.

Here is the student information:

```
Student #1:  
Name:      Kadir Ali  
Age:       17  
Program Code: 1 BEE  
Student #2:  
Name:      Khairiah Abu  
Age:       18  
Program Code: 2 BEE
```

(5 marks)



Q10 (a) Interpret each line of the following codes.

```
FILE *fp;
fp= fopen("MarkahPelajar.txt", "w");
```

(3 marks)

(b) Implement file processing method in the following source code in order to save all information that appear on the computer screen into a text file named *MyCollection.txt*.

**Note:** In your answer script, you could provide the appropriate correct C code with corresponding line number.

```

1  | #include <stdio.h>
2  | #include <string.h>
3  |
4  | struct CD {
5  |     char name[25];
6  |     char id[10];
7  | } CDrec[100];
8  |
9  | void main()
10 | {
11 |     int index=0,number;
12 |
13 |     printf("Enter number of record to save : ");
14 |     scanf("%d",&number);
15 |
16 |     fflush(stdin);
17 |     while (index < number )
18 |     {
19 |         printf("\nEnter CD Title%d :", (index+1));
20 |         gets(CDrec[index].name);
21 |
22 |         printf("Enter ID for CD %d : ", (index+1));
23 |         gets(CDrec[index].id);
24 |
25 |         index++;
26 |
27 |         fflush(stdin);
28 |     }
29 |
30 |     printf("\n\n%-25s %-10s \n","CD ID", "CD Title");
31 |     index = 0;
32 |     while (index < number )
33 |     {
34 |         printf("%-25s %-10s \n",CDrec[index].name, Cdrec[index].id);
35 |         index++;
36 |     }
37 |
38 | }
```

(5 marks)

**PART B: PROBLEM SOLVING (20 MARKS)****Instruction: Answer ONE (1) question only.**

- Q11** Write a complete C program that can create a text file named *electronics.txt*. The program required the user to enter their information and resistor's colour numbers (refer table Q11) to display the colour code. Then all the data must be saved inside the file *electronics.txt*. The output text file should contain the following data, as example.  
**Note:** Your program must use pointer, structure and file processing technique.

User's info:

Name: Mohamed Andrew

No. IC: 7107

Date: 1 April 2009

Resistor's colour numbers: 4 5 2

Resistor's colour code is: Yellow    Green    Red

**Table Q11: Colour Numbers for Resistor**

Colour number	Colour code
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet

(20 marks)

- Q12** Write a complete C program that can create a text file named *personal.txt*. The program required the user to enter 5 customers' data and country code (refer table Q12) to display the country name. Then all the data must be saved inside the file *personal.txt*. The output text file should contain the following data, as example.

**Note:** Your program must use pointer, structure and file processing technique.

Customer's info:

Name: Michael John  
 No. ID: 1234  
 Country code: 2  
 Country name: America  
 Name: Rani Mohinder  
 No. ID: 5678  
 Country code: 5  
 Country name: India  
 Name: Majid Mubarak  
 No.ID: 9123  
 Country code: 7  
 Country name: Malaysia  
 Name: Takashiro  
 No.ID: 4567  
 Country code: 1  
 Country name: Japan  
 Name: Alexandra  
 No.ID: 8912  
 Country code: 3  
 Country name: Russia

**Table Q12: Country Code and Name**

Country code	Country name
1	Japan
2	America
3	Russia
4	England
5	India
6	Germany
7	Malaysia

(20 marks)