Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020

COURSE NAME	:	ALGORITHM AND PROGRAMMING
COURSE CODE	:	BIC10204
PROGRAMME CODE	:	BIP/BIS/BIM/BIW
EXAMINATION DATE	:	DECEMBER 2019 /JANUARY 2020
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 (a) Compose an interactive C Program that can read week day number and print week day name using the following statements.

(i) `switch...case` statement

(10 marks)

(ii) `if...else` statement

(10 marks)

(b) Based on **Figure Q1(b)**, give the final value of `r` if the initial value of `r` is 8.

```
if (r < = 10)
        r = r * 2;
else if (r > = 15)
        r = r - 1;
```

Figure Q1(b)

(2 marks)

(c) Determine the outputs below.

(i)
```
#include <stdio.h>
int main ()
{
int a = 10;
do
{
printf("value of a: %d\n", a);
a = a + 1;
} while( a < 20 );
return 0;
}
```

(2 marks)

(ii)
```
#include<stdio.h>
int main()
{
int j = -5;
do
{
printf("%d\n", j);
j = j + 1;
}
while(j <= 0);
return 0;
}
```

(2 marks)

(d) Write a C programs to show the multiplication table for number 5, from 1 to 10, by using `do-while` loop.

(5 marks)

Q2 Write a program that will implement a one-dimensional array and sort the array in descending order. The steps are such following below.

(i) Start
(ii) Declare an array, `a` of some fixed capacity, 30.
(iii) Take the size of the array as input from the user.
(iv) Define all the elements of the array using for loop.
(v) Sort the elements of the array in descending order.
(vi) Print sorted elements of the array as a final output.
(vii) Exit

Please refer the above descriptions and the example of the runtime test case in **Figure Q2**

Example of Runtime Test Case

```
Enter the value of N
4
Enter the numbers
450
340
120
670
The numbers arranged in descending order are
670
450
340
120
```

Figure Q2

(25 marks)

Q3 (a) Write a C Program using function facilities that will display the calculator menu. The program will prompt the user to choose the operation (each of operation has their own function definition (receive and return function type) and `switch...case` statement should be used for multiple selection procedure).
Program will then ask the users to input two integers number for the calculation.

```
                CALCULATOR MENU

1. Add
2. Subtract
3. Multiply
4. Divide
5. Modulus

Enter your choice: 1
Enter your two numbers: 12 15
Result: 27
```

Figure Q3

(20 marks)

(b) Find the error in each of the following program segments.

(i)
```
int g (void)
{
printf("Inside function g\n");
int h (void)
{
      printf("Inside function h\n");
}
}
```

(2 marks)

(ii)
```
int sum (int x, int y)
{
      int result;
      result = x + y;
}
```

(2 marks)

(iii)
```
int sum (int n)
{
      if (n == 0)
            return 0;
      else
            n + sum (n-1);
}
```

(2 marks)

(iv)
```
void f (float a);
{
      float a;
      printf("%f", a);
}
```

(2 marks)

(v)
```
void product (void)
{
      int a, b, c, result;
      printf("Enter three integers:");
      scanf("%d %d %d", &a, &b, &c);
      result = a * b * c;
      printf("Result is %d", result);
      return result;
}
```

(2 marks)

(c) Determine the outputs below.

```
#include <stdio.h>
void function2 (int h, int a);
void main(void)
{
double a=12.3456, b=-2.5678;
function2(a,b);
      printf("a=%lf      b=%lf \n", a,b);
}
void function2 (int h, int a)
{
      printf("h= %d      j=%d  \n", h,a);
}
```

(2 marks)

Q4 Create a full program to find the biggest number between two numbers key-in by user. The requirement of implementation must use a pointer and reference (not using integer variable) to display the result.
Expected output as in **Figure Q4**.

```
First number  : 5
Second number : 6

6 is the biggest number.
```

Figure Q4

(12 marks)

- END OF QUESTIONS -