Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2018/2019

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	BDA 24202
PROGRAMME CODE	:	BDD
EXAMINATION DATE	:	DECEMBER 2018/JANUARY 2019
DURATION	:	2 HOURS
INSTRUCTION	:	ANSWERS FOUR (4) QUESTIONS ONLY

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

Q1 a) Write the output after execution of the C codes below:

```
#include<stdio.h>
int uthm(int, int);
int uthm1(int,int);
int main(){
int x = 3,  y = 8;
for (x+=2;x<y;x++)
{x=y/x-x;
y=y-3;
uthm(x, y);}
printf("\nThe total value is : %d", x - y);
return 0;
}
int uthm(int k, int a){

            while(k<=a) { k++;
printf("\nThe total value is : %d", uthm1(k,a));
         a-=k; }
            }
int uthm1(int m, int n)
{
m=m-n;
return(m*n);}
```

(10 marks)

b) Write a C program to find all roots of a quadratic equation $ax^2 + bx + c = 0$ (including all imaginary numbers). Given quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

(10 marks)

Q2 a) Write the output after execution of the C codes below:

```
#include<stdio.h>
int func (int );
int main(){
      int n, count;
     for (count = 1; count <= 5; count++){
           n = func (func(count)-count)+ func(count-1);
     printf("%d\t",n);
     }
return 0;
}
int func(int z){

       if (z!=0)
         return z+ func(z-1);
       else
       return z;
}
```

(10 marks)

b) Write a program based on following pseudocode

```
1. START
2. g=9.81
3. u=20
4. while u<=50
       t=10
       while t<=50
              r=u² sin (2t/g)
              t=t+1
              display r
              end while
       u=u+1
       end while
5.  u=400
6. while u<=500
       t=10
       while t<=50
              r=u² sin (2t/g)
              t=t+1
              if r<u
                   display r
                   else
                         display r²
                   end if
              end while
       u=u+1
       end while
7. END
```

(10 marks)

Q3 a) Explain why below statements are invalid:

i) `scanf("%d%d",&i,&j,);` (1 mark)
ii) `scanf("%d%d",&i&j);` (1 mark)
iii) `scanf("%d%d",&i,&j)` (1 mark)
iv) `Scanf("%d%d",&i,&j);` (1 mark)
v) `printf("%d %d,i,j);` (1 mark)
vi) `print("y=%d z=%d",i,j);` (1 mark)
vii) `#include <studio.h>` (1 mark)
viii) `for(x=0,y<5,y++)` (1 mark)
ix) `#define A=10` (1 mark)
x) `#define N 5.3;` (1 mark)

b) Write the output after execution of the C codes below

```
#include<stdio.h>
int f(int a, int *b);
int main()
{
      int a=3, b=7, c=4;
      c=f(b,&a)+3;
      printf("a=%d, b=%d, c=%d\n", a,b,c);
      b=f(a,&c);
      printf("a=%d, b=%d,c=%d\n",a,b,c);
      return 0;
}
int f(int a, int *b)
{
      *b =(a+3)*2 +(*b)%4;
      a=*b-a%6;
      printf("a=%d,b=%d\n",a,*b);
      return 2*a-(*b);
}
```

(10 marks)

Q4 a) Write a program to calculate f(x) value. The values of x and n are determined by user and μ is the average of x.

$$f(x) = \sum_{i=1}^{n} \sqrt[3]{x+\mu} + \sum_{i=1}^{n} (\mu - x)$$

(10 marks)

b) Write a program that able to calculate sum of n terms in the following series:

$$1 - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \frac{1}{5^2} - \frac{1}{6^2} + \frac{1}{7^2} - \cdots + \frac{1}{n^2}$$

(10 marks)

Q5 a) Write a program that read the values of x and print the value of y. y is defined by:

$$y = \begin{cases} \sqrt{|\sin x|} + 5x, \; if \; x < 0 \\ 2\log 2x - e^{x}, \; if \; 0 \leq x < 2 \\ 2^{x} - 1, \; if \; x \geq 2 \end{cases}$$

(10 marks)

b) Draw the corresponding flow chart based on the source code below:

```
#include <stdio.h>
main()
{  int i, j, iter, y, max=40;
   double x, p[max][max];

   for(i=0; i<max; i++)
   {
      for (j=0; j<max; j++) p[i][j] = 0;
}

   for(i=0; i<max; i++) p[i][0] = 100.0;
   for(iter=0; iter<1000; iter++)
   {
      for(i=1; i<(max-1); i++)
      {
         for(j=1; j<(max-1); j++)
         {
            p[i][j] = 0.25*(p[i+1][j]+p[i-1][j]+p[i][j+1]+p[i][j-1]);
         }
 }
}

   for (i=0; i<max ; i++)
   {
      for (j=0; j<max; j++)
      {
         printf( "%f\n",p[i][j]);
      }
      printf("\n");
   }
}
```

(10 marks)

-END OF QUESTIONS –