UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	BDA 24202
PROGRAMME CODE	:	BDD
EXAMINATION DATE	:	DECEMBER 2019/JANUARY 2020
DURATION	:	2 HOURS
INSTRUCTION	:	ANSWERS **FOUR (4)** QUESTIONS ONLY

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TERBUKA

Q1 (a)   Analyze and determine the outputs (g, h, i, j, k) for following statements:

```c
#include<stdio.h>
#include<math.h>
#define A 2+3
#define B(c) c*A+c
int main()
{
float a=1.2,b=2.4,c=3.3,g,h,i,j,k;
int d=5,e=4,f=3.8,m;

g=pow(sqrt(c-a/sqrt(b)*a)*a,b);
h=a=b+=A*b;
h=B(A)/A%d;
i=f%d+(int) (d/(b+a))%d+sizeof (d+e);
j-= (float)(a/f/A)+ A%(f%2) - (float)f/e-2/A;
k=(g>i)?(a<b):(a>b);
k+=a+(a+=b,b/a+c,k-b/a);

printf("%0.2f\n%0.2f\n%0.2f\n%0.2f\n%0.2f\n",g,h,i,j,k);
}
```

(10 marks)

(b)   Write a C program to display **ALL** prime numbers that existed from 10 to 100. Next, obtain the sum of all prime numbers.

(10 marks)

2

Q2   (a)   Determine the 10 outputs after the execution of the C codes below:

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

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

(10 marks)

(b)   Write a program that are able to calculate sum of *n* terms in the below series, user to key in   the *n* value:

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

(10 marks)

Q3 (a) Write a program to calculate and display **ALL** *f(x)* value. Given x= 1 to 3 with an increment of 0.2, and y= 2 to 6 with an increment of 0.5. Display the output in three decimals.

$$f(x) = \frac{x^3 - 2(xy)^2 + x - 6.9}{\sqrt[3]{x} + 0.2y - 5.21 + e^x} + |x|$$

(10 marks)

(b) Solve and identify the outputs after execution of the C codes below:

```
#include<stdio.h>
#include<math.h>
int main()
{
int t= 6, u= 7, v= 8, w= 9, x= 5, a= 3,b= 5, c= 6, d= 7;
int i, h, j, k,f;
float m=5.0,n=2.0;

t= v= w= x;
t+= x*w;
v+= x/u;
w%= u/a;
t=w>v?5:6;
printf("t=%d u=%d v=%d w=%d x=%d", t, u, v, w, x);
f=m/n+t/(u-t)-(u%t);
h=sizeof m+sizeof a+t;
printf("\nf=%d h=%d", f, h);
printf("\nj=%d",t%u);
printf("\nk=%d",(d%b<c)||(c*a<=d));
printf("\nl=%d",((b-c)==(d-c)));

return 0;
}
```

(10 marks)

Outputs:

t =	f=
u =	h=
v=	j=
w=	k=
x =	l =

CONFIDENTIAL

Q4 (a) Write a C program to compute bill payment of electrical consumption for different users. In order to promote saving, Tenaga National Berhad (TNB) charge a lower rate to users with lower consumption as shown in table below.

User Code	User type	First Rate	Second rate	Third rate
1	Household	RM0.10 for first 200 units	RM 0.25 for the following units	If more than 500 units, additional 10% of second rate
2	Office	RM 0.25 for first 500 units	RM0.50 for the following units	If more than 1500 units, additional 12% of second rate
3	Factory	RM 0.50 for first 1000 units	RM 0.75 for the following units	If more than 2500 units, additional 15% of second rate

(10 marks)

(b) Analyze and determine the outputs of the following statement:

```c
#include<stdio.h>
#include<math.h>
int main( )
{
float a=1, c=3,*q;
int i, b=0;
float x[3][3]={1,2,3,4,5,6,7,8,9};
float y[3]={2,4,6};
q=y+2;
for(i=0;i<3;i++)
   {a=a+x[i][b];
   y[i]=y[i]+b;
   b++;
   }
for(i=0; i<3;i++)
   {c=c+y[i];
   }
printf("x[1][2]=%0.2f\n", x[1][2]);
printf("a=%0.2f\n", a/3);
printf("c=%0.2f\n", x[1][1]/c+a);
printf("b=%d\n", b);
printf("*q=%0.2f\n", *q/c);
return 0;
}
```

(10 marks)

Outputs:

x[1][2]=	a=
c=	b=
*q=	

Q5 (a) Explain why below statements are invalid:

      i)   scanf("%d%b,&i,&j);

      ii)   int char;

      iii)   scanf("%d%d",&i,&j)

      iv)   int @formula;

      v)   printf("%dd",i,j);

      vi)   print("y=%d z=%d",i,j);

      vii) #include<mathe.h>

      viii) for(y=0;y<5;y++),

      ix)   int A:10;

      x)   #define N=5.2;

(5 marks)

(b) Construct a program flowchart and develop a programming codes to compute the volume of water in cubic feet per second, flowing through a pipe of diameter $d = 5$, 10, 15…, 50 in feet, with a velocity of $v =10, 20, 30$ ..., 100 feet per second. The formula to compute the volume flow rate per second is given by:

$$r = d/2,$$
$$\text{Area} = \pi \times r^2,$$
$$\text{Volume} = \text{area} \times v$$

(15 marks)

-END OF QUESTIONS-