UNIVERSITI TUN HUSSEIN ONN MALAYSIA

TEST 1
SEMESTER I
SESSION 2021/2022

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	BDA 24202
PROGRAMME	:	BDD
EXAMINATION DATE	:	NOVEMBER 2021
DURATION	:	1 HOUR
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

NAME   :_____

NO MATRIC :_____

SECTION   :_____

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

BDA 24202

Q1 Given **Table 1.0** below, it shows the various type of sources to generate electric power. You are assigned to sketch a flow chart for one of below power sources according to your matrix **last two digits**. For example, if your matrix no. is CD1900**18,** you are assigned to mini wind turbine (please refer to the range in **Table 1.0**). In your flow chart, kindly show the concept of power generation from the selected source and based on total operation hours given by the user.

Table 1.0

Range of matrix no. last two digits (e.g. CD1900**18**)	Between (00 – 25)	Between (26 - 50)	Between (51 – 75)	Between (76 – 99)
Type of source	**Mini wind turbine**	**Solar power**	**Bicycle dynamo**	**Hydro generator**
Factor to influence energy harvest	The wind direction and win speed in hour	Weather - exposure of sun in hour	Dynamo rotation per minute (rpm)	Flow rate in minute
Factor to influence energy harvest	*Temperature (C°) & wind speed:* <28 : 20km/h 28 and above: 30km/h	*Weather & exposure:* Cloudy/rainy: 30% exposure Sunny: 90% exposure	*Dynamo rpm:* Constant rpm:500 High rpm:1000	*Water flow condition & flow rate :* Turbulence: 60L/min Steady: 30L/min
Factor to influence energy harvest	*Wind direction:* Direct blow: 100% Wind skewed from left/right: 60%	*Temperature (C°):* 28<:80% 28 and above: 100%	*Wind drag factor:* Normal wind: reduce rpm 20% Strong wind: reduce rpm 40%	*Barrier in water:* Small barrier: reduce 10% flow rate Huge barrier: reduce 50% flow rate
Energy generation rate/hour (ideal condition)	Every 10km/h wind speed =100watt	Every hour exposure = 35 watt	Every 100rpm = 10 watt	Every 15L/min = 15 watt

(10 marks)

Q2 **Figure 2.0(a)** shows a complete C codes to calculate the volume of a bottle with different upper and lower diameter with using "Pi" as a defined constant. By referring to **Figure 2.0(b)** – program's "Outputs", please write the missing codes based on below C codes.

(10 marks)

Figure 2.0(a)

```c
#include<stdio.h>
#include<math.h>


int main()
{ float thick,h1, h2, a,b, dia;


    printf("**********Bottle Volume Calculator*****************************");

    printf("\n\nThis tool is designed to calculated the volume of plastics bottle:");
    printf("\n\nPlease enter the parameters of bottle: ");

    printf("\n\nheight of bottle h1 (cm): ");
    scanf("%f",&h1);


    printf("please enter diameter of a & b:");
    scanf("%f%f",&a,&b);

    cal1 = ((pi/3)*h2*pow(a,2));
    cal2 = ((a*b)+pow(b,2)+(pi*pow(b,2)*h1));
    vol=cal1+cal2;


    return 0;
}
```

Figure 2.0(b)

```
**********Bottle Volume Calculator*****************************
This tool is designed to calculated the volume of plastics bottle:
Please enter the parameters of bottle:
height of bottle h1 (cm): 2.5

height of bottle h2 (cm): 8
please enter diameter of a & b:4 12

The bottle =1457.179cm^3
_____
```

Q3   (a)   Given C programming codes below, the "scanf" function will read Input value. Please explain the **STEPS** to obtain **ALL** answers.

   i.   Input: **handsanitizer**

```
int main( )
{      int x=65;
       char a,c[3],f,e[4],b,d;
       scanf("%*2c%3c%2s%c%1s%c%2s",e,c,&a,c,&f,e);
       printf("%c %s %c %c %s", f, e, x, a, c);
}
```

(2 marks)

   ii.   Using the **last 3 digits** of your matrix no. (e.g. CD190xxx) as the input for 12xxx98765 (e.g. CD190**018,** Input = 12**018**98765), please identify the answers for below codes:

```
int main( )
{      int a=10,e=3,d=4,f=5;
       scanf ("%*2d%2d%1d%*1d%2d",&a,&e,&d,&a,&e);
       printf("%04d%+5d%-3d%4d",(a+1)%(e+2), e/f, a*e, abs(d-e));
}
```

(2 marks)

   iii. Using the **last 2 digits** of your matrix no. (CD2000**ab**) as the data for below C codes (e.g. CD1900**18**; **a = 1**, **b = 8**), please identify the answers for below codes:

```
#define C 2
#define A 4/C-3*a+12
#define B(e) a-b*e+2*A+a

int main ( )
{printf("%05d, %-6d", A,B(C));}
```

(3 marks)

iv.   Using the **last 2 digits** of your matrix no. as *x* and *y* (e.g. CD190018; **x = 1**, **y = 8**) ,please identify the answers for below codes:

```
#include<math.h>
#define A 12.3
int main ( )
{
        int x,y;
        float sum,total=0;

        sum= (x+y)*2;
        x=(x+2)*(y-2) + A/4 - A;
        y=(10>x)?(x<15):10,12;

        total=10+x+y;
        printf("%8.3f",sqrt(total)); }
```

(3 marks)

-END OF QUESTION-