CONFIDENTIAL

Infrastructure University Kuala Lumpur

SUNWAY INT'L BUSINESS SCHOOL

FINAL EXAMINATION
JUNE SEMESTER 2019

PROGRAMMING FUNDAMENTALS
(CSC 1510)

(TIME : 3 HOURS)

MATRIC NO. : | | | | | | | | | | | | |

IC. / PASSPORT NO. : | | | | | | | | | | | | | | |

LECTURER : PRAKASH CHANDRA

GENERAL INSTRUCTIONS

1. This question booklet consists of 7 printed pages including this page.
2. Answer **ALL questions** in **SECTION A and B** in the **ANSWER BOOKLET**.
3. Answer **ANY ONE (1) question** in **SECTION C** in the **ANSWER BOOKLET**.
4. **PLEASE DO NOT TURN THIS PAGE AND START THE EXAM UNTIL YOU ARE TOLD TO DO SO.**

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INSTRUCTIONS: **TIME: 3 *HOURS***

SECTION A **(30 MARKS)**

There are FIVE (5) questions in this section. Answer ALL Questions in the Answer Booklet.

1. Write the output of the following code fragments.

```
int x=2; int z=1;
int y= x- z;
z= 1*y+3;

printf("Value Z= %d\n",z);

int w=x-2*y+z;
z=w-x;

printf("Value W=%d\n",w);
printf("Value X= %d\n",x);
printf("Value Y= %d\n",y);
printf("Value Z= %d\n",++z);
```

(5 marks)

2. Determine the value for each of the following expression. Use the values initially assigned to the variables for each expression.

```
int a = 2, b = -7, c = 15;
```

a) `c / a - b++;`

(2 marks)

b) `27 * b++ - 16 % ++a;`

(2 marks)

c) `(float) c / a;`

(2 marks)

d) `a*b - c++;`

(2 marks)

e) `18 / ++a + a++;`

(2 marks)

3. Trace the output of the following code segment:

```
char q1[30]="Testing";
char s1[20]="Only For Now";
printf("%s\n",q1);
printf("%d\n",strlen(q1)+strlen(s1));
printf("%s\n",strcat(s1,q1));
```

(5 marks)

(CLO2:PLO2:C2)

4. Complete the following program.

```
#include<stdio.h>
main()
{
float a = 33.4;
float b=44.8;
float c = multiply (a,b);
printmessage(c);
}
```

a) Write a C code for `multiply()` function that able to multiply the value of a and b.

(3 marks)

b) Write a C code for `printmessage()` function that able to print the answer for the multiplication of a and b.

(2 marks)

5. Implement array in the following questions :

a) Declare a one-dimensional int array `arr` of size 20 and initialize all elements with values 0.

(3 marks)

b) Assign 8 to the sixth element of the array `arr`.

(2 marks)

(CLO2:PLO2:C4)

SECTION B **(40 MARKS)**

There are FIVE (5) questions in this section. Answer ALL Questions in the Answer Booklet.

1. Based on the following output, write a complete C program that prompts the users to enter five different numbers and find the largest number among them. Use an array to store these numbers.

Enter your number : 1
Enter your number : 5
Enter your number : 2
Enter your number : 14
Enter your number : 0

The largest number you entered is 14.

(15 marks)

2. Convert the program segment into the following loops.

```
int sum=0;
int counter=7;
while(counter<=24)
{
sum=sum+counter;
counter=counter+5;
}
printf("Sum = %d and counter=%d",sum,counter);
```

a) for loop

(5 marks)

b) do while loop

(5 marks)
(CLO2:PLO2:C4)

3. What is the output for the following code segment:

```
int x;
for(x=0;x<5;x++)
   switch(x){
      case 0: printf("Welcome\n"); break;
      case 1: printf("Hello\n");
      case 2: printf("Have a nice day\n"); break;
      case 3: printf("Thank you\n"); break;
      case 4: printf("Good bye\n");  }
```

(5 marks)
(CLO2:PLO2:C2)

4. Rewrite the following code segment using if else statements.

```
switch(x)
{
case 0: printf("Welcome\n"); break;
case 1: printf("Hello\n"); break;
case 2: printf("Have a nice day\n"); break;
case 3: printf("Thank you\n"); break;
case 4: printf("Good bye\n"); break;
     default: printf("Wrong input");
}
```

(5 marks)

5. Write a function definition called Define ( ) that receives 3 numbers and returns the multiplication of the numbers.

(5 marks)
(CLO2:PLO2:C4)

SECTION C **(30 MARKS)**

There is TWO (2) Programming Challenge questions in this section. Answer ANY ONE (1) Question in the Answer Booklet.

1. NetBeans Coffee Outlet runs a catalog business. It sells only one type of coffee beans, harvested exclusively in the remote area of Seri Kembangan. The company sells the coffee 200 gram bags only, and the price of a single 200 gram bag is RM5.50.

   When a customer places an order, the company ships the order in boxes. The boxes can only hold 20 bags of 200 gram coffee beans. The cost of a each box is RM1.00. The order is shipped by using the least number of boxes. For example, the order of 43 bags will be shipped in three boxes.

   NetBeans Coffee Outlet decided to give discounts to volume buyers. The discount is based on the following table:

Order Volume (bags)	Discount (of total price)
50 – 99	10%
100 – 149	15%
>=150	20%

   Write a complete C program that can compute and display the total cost of an order. The displayed results should be formatted to two decimal points. The example of output should be as following:

```
Number of Bags Ordered :43
The price before discount = RM236.50
Discount=RM47.30
Boxes used:
3 Large Box     - RM3.00
The total price ( with or without discount) = RM192.20
```

(30 marks)
(CLO3:PLO6:C5)

2. Assume that you are hired to develop applications software which is designed specifically for a local university election. This application software must allow the user to enter the ID of five election candidates and the number of votes received by each candidate. Finally, the program should be able to output each candidate's ID, the number of votes received by each candidate, the percentage of the total votes received by each candidate, the total number of votes, and also the final winner of the election. The displayed results should be formatted to two decimal points. Use array in this program. The example of output should be as following:

```
Candidate       Votes Received      % of Total Votes
-----------------------------------------------------
1111            5000                25.91
2222            4000                20.73
3333            6000                31.09
4444            2500                12.95
5555            1800                9.33

Total votes = 19300
```

(30 marks)
(CLO3:PLO6:C5)

***** END OF QUESTIONS *****