INTI
International College Subang
LAUREATE INTERNATIONAL UNIVERSITIES

FINAL
Examination Paper

(COVER PAGE)

Session	:	**April 2015**
Programme	:	Diploma In Information And Communication Technology (DICTN /DICTI)
Course	:	**ICT1103 / CSC1103 : Structured Programming**
Date of Examination	:	August 7, 2015
Time	:	8:00am – 10:00am Reading Time: Nil
Duration	:	2 Hours
Special Instructions	:	

Answer any **FOUR (4)** questions.

Materials permitted :

Nil

Materials provided :

Nil

Examiner (s)	:	**Mr. Chern Huey Rong,** Ng Ruoh Ling.
Moderator	:	Ms. Siti Hawa Mohamed Said

This paper consists of 7 printed pages, including the cover page.

INTI INTERNATIONAL COLLEGE SUBANG

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY (DICTN/DICTI)
ICT1103/CSC1103: STRUCTURED PROGRAMMING
FINAL EXAMINATION: APRIL 2015 SESSION

Instructions: This paper consists of **SIX (6)** questions. Answer any **FOUR (4)** questions in the answer booklet provided. All questions carry equal marks.

Question 1

(a) Discuss any **FOUR (4)** fundamental data types and their bit width.

(8 marks)

(b) Write a simple switch block that will display different messages based on the value of the variable it takes. Use the messages provided below for your switch block.

Value of variable	**Messages**
1	Poor
2	Average
3	Good
4	Excellent

(7 marks)

(c) Write a program that reads 10 positive integers from the user. Your program will then calculates and displays the total of all the even integers add up together and the total of all the odd integers add up together.

For example: if the inputs are 5, 8, 14, 53, 47, 23, 88, 19, 22, and 45. Then the output of the program should be:

The total for all the even numbers is 132
The total for all the odd numbers is 192

(10 marks)

Question 2

(a) One big packet of Twisties snack consists of 12 mini packets. One big packet is priced at RM3.40. In a party, you would like your guests to have minimum of 2 mini packets of Twisties snack. Write a program that is able to calculate and show the number of big packets of Twisties snack you should buy and the price to pay for by reading the number of guests coming to your party.

(7 marks)

(b) What is printed by each of these statements?

(i) `int x = 1; cout << ++x;`

(ii) `cout << 4+3 * 4-3;`

(iii) `cout << (1 > 2) ? 'a' : 'b';`

(iv)
```
int x=1, y=2;
if (x != y) {
 cout << "www";
}else{
 cout << "ppp";
}
```

(v)
```
int x=1, y=2;
if (x < y || x > y) {
 cout << "www";
}else{
 cout << "ppp";
}
```

(vi)
```
int x=1, y=2;
if (x < y && x > y) {
  cout << "www";
}else{
 cout << "ppp";
}
```

(vii)
```
for (int j=0; j<4; j++) {
 cout << j << " ";
}
```

(viii) `int y = 2; y*= 3; cout << y;`

(8 marks)

(c) Write a program that prints the sum, difference, product & quotient of any **TWO (2)** numbers entered by the user.

(5 marks)

(d) Write a program that asks the user to type 10 integers of an array. The program must compute and write the number of integers greater or equal to 10.

(5 marks)

Question 3

(a) The following questions are referred to one program:

(i) Write a main function that has an array of size 10. Use the built-in function to randomly generate 10 integers ranged between 1 and 50 and inclusive of 1 and 50 to be stored to the array. Use loop structure to perform the initialization of random numbers. Include the header files needed.

(7 marks)

(ii) Write a separate function that takes the array passed from main function and return the average value of all the values in the array.

(6 marks)

(iii) Write a separate function that takes the array and the average value from main function. The function then displays the values smaller than average.

(5 marks)

(b) Write a **recursive function** that takes two arguments, **x** and **y** of type *int* and print the integer values from **x** to **y**, assuming the value of x is always smaller than y. For example: if x is 2 and y is 5, then the output printed from the function will be:

2
3
4
5

(7 marks)

Question 4

(a) Write a function that takes an array and its size. The function then reverses the order of all elements in the array and displays them on screen. For example, if the array elements are [11, 2, 7, 4, 8], then the reversed order is [8, 4, 7, 2, 11]. The function prototype is

void reverseArray(int [], int)

(9 marks)

(b) Identify and correct the errors in each of the following:

(i)
```
if(c<7);
  cout<<"c is less than 7\n";
```

(ii)
```
if(c=>7)
  cout<<"c is equal to or greater than 7\n";
```

(iii) The following code should print the values 1 to 10.
```
n = 1;
while(n<10)
  cout<<n++<<endl;
```

(iv)
```
#include <iostream>;
```

(v)
```
if ( age >= 65 )
  cout << "Age is greater than or equal to 65" << endl;
else
  cout << "Age is less than 65 << endl";
```

(vi)
```
while ( x <= 100 )
  total += x;
  ++x;
```

(vii)
```
x = 1;
while(x <= 10);
  x++;
}
```

(7 marks)

(c) Write a program to find and display the number of times a letter occurs in a given sentence. Read the letter and the sentence from the user.

(9 marks)

Question 5

(a) Given the following content in a character-based file named *records.dat*:

David
Accounting
2500
Lancy
Human Resource
3200
Peter
2800
IT
Amanda
Sales
1600

Write a program that is able to read the data from the records.dat file and displays the output as follow:

Name	Department	Salary (RM)
David	Accounting	2500
Lancy	Human Resource	3200
Peter	IT	2800
Amanda	Sales	1600

Use the setw function to arrange the columns and include proper header files.

(10 marks)

(b) Explain the following keywords used in C++ :

(i) return
(ii) continue
(iii) include
(iv) break

(8 marks)

(c) The country A has 50M inhabitants, and its population grows 3% per year. The country B, 70M and grows 2% per year. Write a program to tell in how many years population of A will surpass B.

(7 marks)

Question 6

(a) Provide the output of the following program:

```
#include <iostream>
using namespace std;
int main()
{
        int arr[] = { 25, 10, 35, 70 };
        int x, y, *p = arr;
        x = *p;
        y = *(p + 2);
        cout << x << "\t y = " << y << endl;
        int *a, *b;
        a = &x;
        b = &y;
        cout << x << "\t y = " << y << endl;
        *a = 3;
        cout << x << "\t y = " << y << endl;
        a = b;
        y = *a;
        cout << x << "\t y = " << y << endl;
        system("pause");
        return 0;
}
```

(8 marks)

(b) Request a set of (x, y) coordinates and a name from user, then sort and display them in order increasing distance from the origin (0, 0). Define struct to hold coordinates and name of each point. Define a function to calculate the distance from origin. Store the set of coordinates in an array of structure. Write a main program to execute your function.
To find the distance of a point from the origin, use the formula below:

$$d = \sqrt{x^2 + y^2}$$

(12 marks)

(c) Using break statements, write a program that will loop perpetually to continually input positive numbers from user and total them out and will only break out of the loop when user enters -1. Once the program breaks out of the loop, it will display the total.

(5 marks)

~ The End ~