FINAL
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**April 2022**
Programme	:	Diploma in Information Technology (DITN)
Course	:	**ICT1103: Structured Programming**
Date of Examination	:	August 4,2022 (Thursday)
Time	:	4.00pm – 6.30pm Reading Time : Nil
Duration	:	2 Hours 30 Minutes

Special Instructions :

Note: 30 minutes is added into the duration of the examination to factor in any connectivity matters and for you to scan and upload your scripts.

Answer **ALL** questions in **Section A** and **Section B.**

Material permitted :
Non-Programmable Scientific Calculator

Materials provided :
Nil

Examiner(s)	:	**Ms Shee Fui Chie** and Mr Lai Kim Min
Chief Moderator	:	Ms Ng Ruoh Ling

*This paper consists of **6** printed pages, including the cover page*

DIPLOMA IN INFORMATION TECHNOLOGY PROGRAMME (DITN)
ICT1103: STRUCTURED PROGRAMMING
FINAL ALTERNATIVE ASSESSMENT: APRIL 2022 SESSION

Instruction: This paper consists of **TWO (2)** sections. Answer **ALL** questions in **SECTION A** and **SECTION B**.

SECTION A (60 marks)
Instruction: This section consists of **FOUR (4)** questions. Answer **ALL** questions.

Question 1

(a) Write a C++ statement to accomplish each of the following tasks:

(i) Indicate "A C++ tutorial " is a comment line.

(ii) A preprocessor directive to paste in the contents of the user defined file myfunction.cpp into the stream of C++ code that fed to the compiler.

(iii) To hold the output screen.

(iv) Move cursor to next line.

(v) Declare a variable number to store a constant floating number 6.79.

(vi) Print a backslash character

(6 marks)

(b) Which operation will evaluate first in the following statement?

(i) float total = 8 + 33 / 3;

(ii) (16 + 8) / 4

(iii) y = a / 2 – x % b;

(iv) x %= y += 23;

(v) a = = b + c

(vi) cout << (i == j) << endl;

(vii) cout << number++;

(viii) true || false && true

(ix) int min = (m < n ? m : n);

(9 marks)

[Total 15 marks]

Question 2

(a) Produce the following output with a nested for loop:

```
@x@xx@xxx@xxxx
```

(5 marks)

(b) The following table shows the quarantine period in Malaysia for Covid-19 cases. Write a code fragment with switch statement to print out the relevant message to the users.

Vaccination Dose	Message
0	Quarantine period is 10 days
1	Quarantine period is 7 days
2,3 or 4	Quarantine period is 5 days
Other values	Unable to process the request

(10 marks)

[Total 15 marks]

Question 3

(a) Write the function prototypes for the following scenarios:

(i) A void type function called `drive` that takes in an integer parameter.

(ii) A void type function called `saveData` that takes in two integer parameters as

(iii) pointer type.

(iv) A function called `getReport` that accepts two double reference parameters and returns a string value.

(6 marks)

(b) Create a function definition called `answerQuestion` that obtains 2 random single digit numbers (0-9) and produce an addition mathematic question to the elementary school students**.** Prompt the user to enter the answer and display the result either "`Correct`" or "`Incorrect`" to the user. Implement this function based on the given requirements.

Sample run:

```
5 + 9 = ?
14
Correct
```

(9 marks)

[Total 15 marks]

Question 4

(a) Write a code fragment to prompt the user to enter a set of positive numbers with a while loop. The loop will be terminated if the entered number is smaller than the previous number. Then print out the quantity of entered number.

Sample run:

```
Enter a number: 5
Enter a number: 7
Enter a number: 1
3 number(s) entered
```

(9 marks)

(b) Write a code fragment to prompt the user to enter their favourite colour. If the colour is "red", "RED" or "Red" then display the message "`I like red too`". Otherwise, display the message "`I don't like [colour], I prefer red`".

(6 marks)

[Total 15 marks]

SECTION B: (40 marks)

Instruction: This section consists of **TWO (2)** questions. Answer **ALL** questions.

Question 5

Write a program to prompt the user to enter the area of a circle. The area of the circle must be bigger than 0. Otherwise, prompt the user to re-enter the circle's area. Create a function to calculate and return the radius of the circle. Then use another function to calculate the circumference of the circle. You must create the following functions to assist you in the calculation:

- `getRadius(double area)`
  - Accept the parameter (area of the circle and return the radius of the circle)
- `calculateCircumference(double radius)`
  - Accept the circle radius and display the circumference of the circle.

The formula of the circle circumference is $2\pi R$ and area is πR^2. Format your result in 2 decimal places.

Sample run:

```
Enter the circle area: -9
Invalid input! The area must be bigger than 0.
Enter the circle area: 12.57
The circumference of the circle is: 12.57
```

(20 marks)

[Total 20 marks]

Question 6

You are required to develop a simple program to trace the location for a particular place.

(a) Create the following structures to store the location details:

Location
latitude : double type (e.g. 10.52412)
longitude : double type (e.g. -6.12457)

Place
name : String type (e.g. INTI College)
type : char type (e.g. 'H' stands for Hotel)
location : Location type

(7 marks)

(b) Write a code fragment to define a structure variable `places` of type Place. Let the user input all the place details. Input validation is not required in this implementation.

(8 marks)

(c) Create a function called `identifyPlaceX` that accepts a structure variable of Place type. The function will return true for 'H' type.

(5 marks)

[Total 20 marks]

-THE END -