FINAL

ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**April 2022**
Programme	:	Certificate in Information Technology (CIT)
Course	:	**CIT1003: Fundamentals of Programming**
Date of Examination	:	August 4, 2022 (Thursday)
Time	:	4:00pm – 6:30pm Reading Time : Nil
Duration	:	2 hours 30 minutes

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.

Special Instructions :

This paper consists of FOUR (4) questions. Answer **ALL** questions. Write **ALL** your answers in foolscap paper.

Material permitted :

Non-Programmable Calculator

Materials provided :

NIL

Examiner(s) :	:	**Ms Lusiana Syaiful** and Dr Nor Rahayu Ngatririn
Chief Moderator	:	Ms Ng Ruoh Ling

*This paper consists of **5** printed pages, including the cover page*

CERTIFICATE IN INFORMATION TECHNOLOGY PROGRAMME (CIT)
CIT1003: FUNDAMENTALS OF PROGRAMMING
FINAL ALTERNATIVE ASSESSMENT : APRIL 2022 SESSION

Instructions: This paper consists of **FOUR (4)** questions. Answer **ALL** questions. **Write ALL your answers** in the foolscap paper.

Question 1

(a) List out and explain the **SIX (6)** phases in Program Development Life Cycle (PDLC).
(6 marks)

(b) Produce a C++ statement for each of the following tasks:

(i) $k = 25n[\frac{n-m}{3j}]^r$

(ii) $k = \frac{\frac{5a}{2b}+d}{d} - 6\frac{b}{f}$

(iii) $k = \frac{a}{b}\ (3c + a\ )^{7-j}$

(iv) $k = (\ 27c\ )^{5-7a} + m \div 3b$

(v) $k = 22a(j+3)^{7c+k} - \frac{5}{9a+c}$

(15 marks)

(c) Declare the following variables with suitable data type for each of the following items:

(i) An average score
(ii) Type of gender
(iii) Student ID for INTI College
(iv) Volume of sphere

(4 marks)
[Total 25 marks]

Question 2

(a) Write a single statement to accomplish each of the following:

(i) Declare the variables `x` and `price` to be of type `int`.

(ii) Prompt the user to enter an integer. Hint: End your prompting message with a colon (:) followed by a space and leave the cursor positioned after the space.

(iii) Read an integer from the user and store the value entered in integer variable amount.

(iv) Assign the value 89 to the variable name `price`.

(v) While loop condition that will end when `i` is greater or equal to 5.

(5 marks)

(b) Calculate the taxes that are to be paid by a worker; given that if the salary is less than or equals to RM1000 the rate is 4%, and 8% if the salary is greater than RM1000. Show how you would illustrate the matter above using pseudocode.

(4 marks)

(c) How many times the value of index will be printed on the screen? Give reason for your explanation.

```
int index = 1;
do
{
     cout << index << endl;
     index++;
}while (index > 1);
```

(4 marks)

(d) Request a number, n, from 1 to 30. Then write a function to calculate the product of the numbers from 1 to n. Include a call example to the function.
Input validation: Display invalid input message if the value is not in between the range.

(12 marks)

[Total 25 marks]

Question 3

(a) Formulate the pseudocode below into a flowchart.

```
1.0  BEGIN
2.0  DECLARE num
3.0  READ num
4.0  IF num%2 is equal to 0
5.0  PRINT 'even number'
6.0  ELSE
7.0  PRINT 'odd number'
8.0  PRINT 'good bye'
9.0  END
```

(6 marks)

(b) Using the following loop statements, write a program fragment to count the total from each third number, starting from `i` = 2 (E.g.: 2 + 5 + 8 + 11 + …) for all `i` values that less than 100.

(i) `for` loop

(ii) `while` loop

(iii) `do..while` loop

(9 marks)

(c) Using a switch selection statements, write code fragments to display the following Game Menu:

```
Asteroid Game
1. New Game
2. Load Game
3. Save Game
4. Quit
Enter Choice (1-4):
```

If user enters any of the choices numbered 1 to 4, it will print a message:

```
You entered <number entered>
```

where <number entered> is the number the user typed.

(6 marks)

(d) Explain **TWO (2)** types of computer programs and provide example for each.

(4 marks)

[Total 25 marks]

Question 4

(a) The table below shows the relationship between Body Mass Index (BMI) and the categories.

Body Mass Index	Categories
<18.5	Underweight
18.5 – 24.9	Normal
25 – 29.9	Overweight
>30	Obese

Write a program as follows:

- The `main` program asks the user to enter `weight` and `height`.
- The function definition named as `BMI`, accepts two inputs as parameters and calculate the BMI using the formula, `bmi = weight ÷ (height x height)`. This function `return` and display the `bmi` value to the `main` program.
- The `main` program then will display an appropriate category of BMI according to the table above.

(13 marks)

(b) Write a program to solve the following problem. Traders Hotel is introducing the new room rate for the 2022:

Types of Room	Room Rate (RM/night)
Super Luxury (S)	2500
Luxury (L)	1500
Deluxe (D)	750

In order to calculate the charges, user is required to input:

- Types of room (S/L/D)
- The number of days customer stay in the hotel

7% services tax will be added to the charges. Once the total charges (inclusive of services tax) are calculated, display the total charges to the user. Your program should repeat the process for a new calculation until user enters 'N' to terminate the program.

(12 marks)
[Total 25 marks]

-THE END-