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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2013/2014**

COURSE NAME : COMPUTER PROGRAMMING
COURSE CODE : BFC 20802
PROGRAMME : 2 BFC/3 BFC
EXAMINATION DATE : DECEMBER 2013/JANUARY 2014
DURATION : 2 HOURS
INSTRUCTION : A) ANSWER **ALL** QUESTION FROM
PART A AND PART B
B) CHOOSE ONLY **TWO (2)** QUESTION
FROM PART C

THIS QUESTION SET CONSISTS OF **TWELVE (12)** PAGES

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SECTION APlease answer **T (True)** or **F (False)**.

No.	Questions	Answer	
		True	False
1	<p>This program can be compiled and run without errors.</p> <pre>include<iostream> using namespace std; int main() { int i; for (i = 0; i < 10, i++) { cout << "Hello" << "\n"; cout << "There" << "\n"; } return 0; }</pre>		
2	Main memory is retained when program terminates or computer is turned off.		
3	<i>while</i> loop statements is guaranteed to iterate the body of the loop at least once.		
4	The computer programs that run on a computer are referred to as hardware.		
5	The extension name of a C++ source code file is .obj		
6	Computer software consists of System Software and Application Software.		
7	Computer programmers are someone who develops application or system software.		
8	<code>float score[2.4]</code> is a valid array statements.		
9	<code>iostream</code> is a standard C++ header file and contains definitions for input and output, such as <code>cin</code> and <code>cout</code> .		
10	Overloaded functions can accept same number of arguments.		

(10 marks)

SECTION B

Instruction: Answer **ALL** questions.

Q1 Execute the flowchart in Figure **Q1(a)** using the input values as follows:

Input: 75, 89, 38, 67, 102, 35, 94

- (a) Fill in Table **Q1(a)** to trace the execution of the flowchart in Figure **Q1(a)**.
(4 marks)
- (b) How many times are the statements in the loop executed?
(1 mark)

Q2 Write C++ statements to perform each of the following:

- (a) Read 7 data for assign value into array `aNumber`
(1 mark)
- (b) Declare a group or array of 12 values named `cArray`, each one being a char.
(1 mark)
- (c) Declare an array of 100 floating-point values.
(1 mark)
- (d) Write an initialised array named `rate` that holds the value of 12.5, 11.0, 22.5, 20.8, 50.0
(1 mark)
- (e) Write an array named `name` that holds the characters "Amir Affandi".
(1 mark)

Q3 Given with $a = 2$ and $b = 5$. Evaluate the following logical expression:

(a) $!((5 * b) \leq (23 - a))$

(2 marks)

(b) $((b + 3 \neq 8) \vee (3 * a < 2))$

(2 marks)

(c) $(a < b) \wedge (b < 10)$

(1 mark)

Q4 (a) State the output of these statements:

```
float h = 53.54;
int g = 890;
cout << setw(10) << g << setw(15) << h << endl;;
cout << setprecision(3) << showpoint << setw (5) << h << endl;
cout << setw(-10) << g << setw(10) << h << endl;;
cout << setprecision(3) << fixed << setw (5) << h<< endl;
```

(4 marks)

(b) The above stream manipulator `setw()` requires a header file. Please state the header file.

(1 mark)

Q5 Given the following code snippet:

```
char cSyahir[12]= "Boring";
cout<<"Index 0 has "<<<cSyahir[0]<<endl;
cout<<"Index 1 has "<<<cSyahir[1]<<endl;
cout<<"Index 2 has "<<<cSyahir[2]<<endl;
cout<<"Index 4 has "<<<cSyahir[4]<<endl;
cout<<"Index 5 has "<<<cSyahir[5]<<endl;
cout<<"Index 6 has "<<<cSyahir[6]<<endl;
```

(a) How many indexes do array name `cSyahir`, have?

(1 mark)

(b) How many characters (including the null character at the end of the array), do this array hold?

(1 mark)

- (c) The number of an index is also called index. What is the lowest index? (1 mark)
- (d) What is the highest index for this array? (1 mark)
- (e) What is the character value that is stored in the index number 5? (1 mark)

Q6 Write **if-else** statements for which the output is “Alarm: Boiler Pressure: TOO HIGH” if the value of the variable *boiler_pressure* is greater than 1000, and the output is “Boiler Pressure: TOO LOW” if the value of *boiler_pressure* is below 100, otherwise the output is “Boiler Pressure: within normal limits.” (5 Marks)

Q7 Trace the output for the following statements:

- (a) What is the output for the following statements?

```
cout << "Computer Programming";
cout << "\t\t is\n\nmy";
cout << " favourite\nsubject";
```

(3 marks)

- (b) Write the expression of C++ language which is equivalent with the following mathematical expression and write the output, given, $e = 11$, $f = 4$, $h = 35$ and $k = 80$.

$$k += \frac{12e + 7f^3}{h - 6}$$

(2 marks)

Q8 Given the following C++ program:

```

#include <iostream>
using namespace std;
int main()
{
    int no1 = 25, no 2 = 4;
    no1 %= no2;
    cout << no1 << endl;
    no2 -= no1
    cout << no2 << endl;
    return 0;
}

```

- (a) Find **THREE (3)** errors in the above program and rewrite the correct code. (3 marks)
- (b) What is the output for the above program after the program has been corrected? (2 marks)

Q9 Given the following C++ program:

```

int digit, a, b, c, h = 7, i = 4, j = 25, k;
cout << "Please enter digit (between 1 to 2 only):
";
cin >> digit;
if (digit == 1)
{
    a = 3 + ++i;
    b = 10 - i++;
    c = 5 * i-- + j;

    cout << i++;;
}
else if (digit == 2)
{
    k = 3 + j % i * h;
    cout << k;
}
else
{
    cout << "Wrong selection";
}

```

- (a) Rewrite the above code segment by using `switch...case` statement

(3 marks)

(b) Given the input *digit* = 1, write the output.

(1 mark)

(c) Given the input *digit* = 2, write the output.

(1 mark)

Q10 Given the following C++ program:

```
#include <iostream>
using namespace std;
int main()
{
    int iCounter = 3, iSum = 0;

    while (iCounter <= 15)
    {
        iSum += iCounter;
        cout << iSum << endl;
        iCounter++;
    }
    return 0;
}
```

Complete the flowchart in Figure **Q10** based on the above program.

(5marks)

SECTION C

Instruction: Answer **TWO (2)** questions only.

- Q1** Construct an algorithm of a **flowchart** and write a **complete C++ code** which ask user to proceed or not by reads the character of 'Y' or 'y' which means YES (proceed) the execution of program. The program will display the triangle of * such as depicted in Figure **Q1(b)** using nested loop.

Example of Output: refer to Figure **Q1(b)**.

(20 marks)

- Q2** Write a **complete C++ code** to display multiplying table. The program must do an input validation for multiplying number needed before display the multiplying (input must be between 1 to 12). The program also will allow user to repeat the display of multiplying table with another selection of *sifir* (number to multiplying).

Note: Please identify the **input**, **process** and **output** before write the C++ code.

Example of Output (multiplying table): refer to Figure **Q2**.

(20 marks)

- Q3** Table **Q3(a)** is the indicator to determine the range of CGPA while Table **Q3(b)** is the input from the user. You are required to develop a program to calculate the CGPA based on CPA entered for three (3) semesters. Create a **flowchart** and write **C++ program** based on the functions in Table **Q3(c)**.

Example of Output: refer to Figure **Q3**.

(20 marks)

- Q4** Create a **C++ program** that will reads in 3 integers from keyboard, calculate the average and display the average. Draw a **flowchart** where you need to invent:

- 3 prototype function: **int getInteger(void)**, **float calcAverage(int a, int b, int c)** and **void dispAverage(float avg)**
- main()** function that needed to ask an input of three numbers from user.
- After that, call the **getInteger()** function which accept 3 integer numbers and calculate the average using **calcAverage(val1, val2, val3)** function . Then, print the average value by using the **dispAverage(float avg)** function.

(20 marks)

- END OF QUESTIONS -

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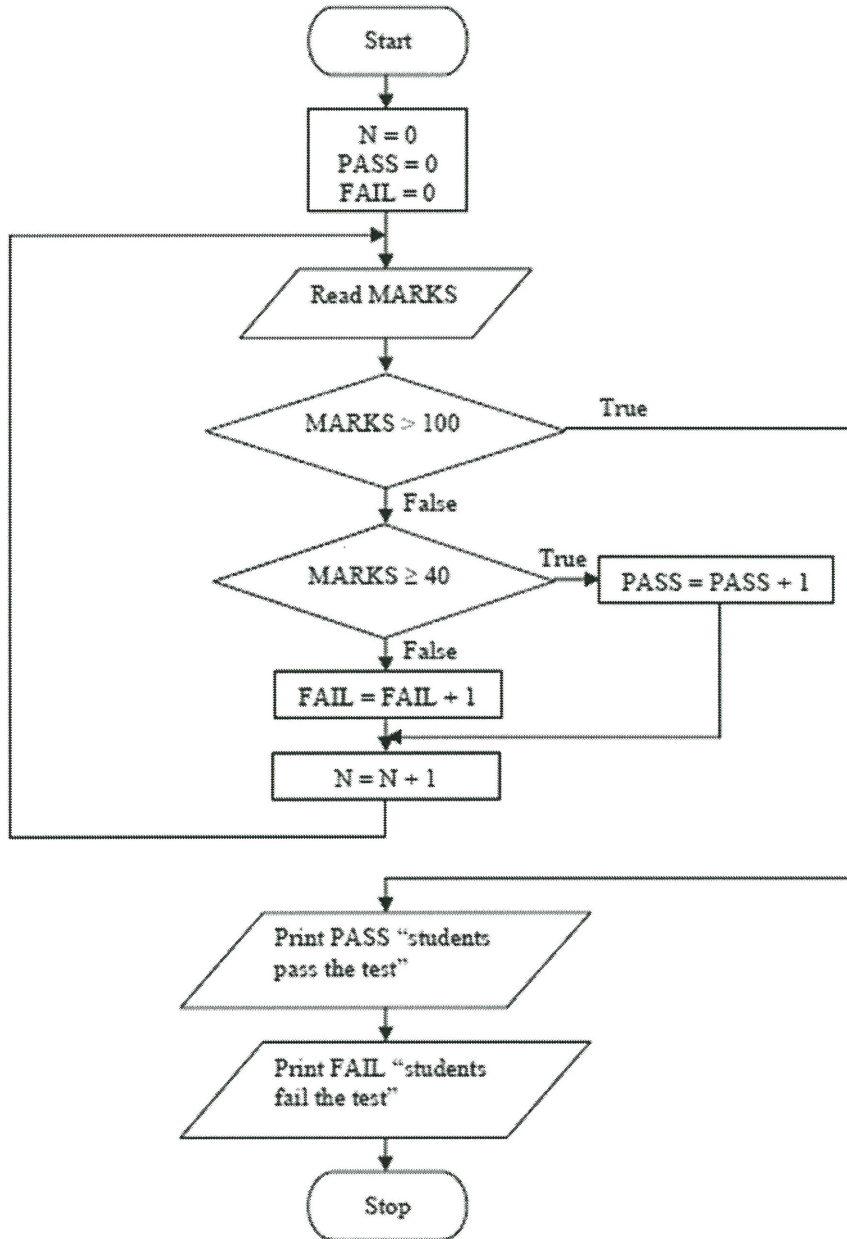


FIGURE Q1(a)

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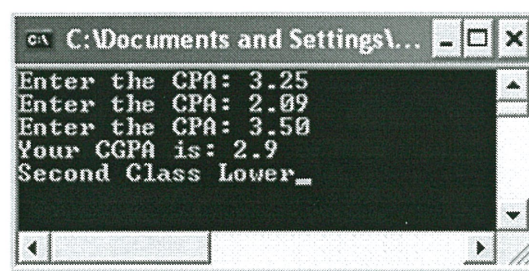
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```
* * * * *  
* * * *  
* * *  
* *  
*
```

FIGURE Q1(b)

You have choose SIFIR 3 to display
SIFIR 3 TABLE

```
-----  
1     x 3    = 3  
2     x 3    = 6  
3     x 3    = 9  
4     x 3    = 13  
5     x 3    = 15  
6     x 3    = 18  
7     x 3    = 21  
8     x 3    = 24  
9     x 3    = 27  
10    x 3    = 30  
11    x 3    = 33  
12    x 3    = 36
```

FIGURE Q2**FIGURE Q3**

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FIGURE Q10

TABLE Q1(a)

MARKS	N	PASS	FAIL

