Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2014/2015

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	BFC 20802
PROGRAMME	:	2 BFF / 3 BFF
EXAMINATION DATE	:	DECEMBER 2014 / JANUARY 2015
DURATION	:	2 HOURS
INSTRUCTION	:	1. ANSWER **ALL** QUESTIONS IN THIS BOOKLET
		2. CHOOSE ONLY **TWO (2)** QUESTION FROM SECTION C
		3. ANSWER **ALL** QUESTIONS IN THE ANSWER BOOKLET PROVIDED

THIS QUESTION PAPER CONSISTS OF **ELEVEN (11)** PAGES

SECTION A (10 MARKS)

Instruction: Please answer **T (True)** or **F (False)**.

No.	Questions	Answer	
		True	**False**
Q1	1 2 3 is a valid identifier in C++.		
Q2	All variables must be declared before they're used.		
Q3	C++ considers the variables **number** and **NuMbEr** to be identical.		
Q4	The object used to print information on the screen is CIN.		
Q5	A C++ statement that makes a decision is IF.		

Q6	int result = 1;
	
	for(int i = 1; i <= 5; i++)
	{
	if(i%2 == 1)
	result *= i;
	}
	Output for this program is: 1 3 15		

Q7	float numbers[10.2] is a valid array statements.		
Q8	Statements and declarations must end with semicolons.		
Q9	This code will produce **44** as an output. int value[20]={0,11,22,33,44,55,66,77,88,99}; cout<<value[5];		
Q10	C++ contains three different loop structures: the ***while*** loop, the ***do...while*** loop and ***if*** loop.		

(10 marks)

SECTION B (50 MARKS)

Instruction: Answer **ALL** questions.

Q1 Write the expression of C++ language which is equivalent with the following mathematic expressions:

No	Mathematical Expression	Answer
1	$\frac{a^3+ab}{(c^2-5c)(ab+1)}$	
2	ab + (ac/bc) + abc	
3	(a + b) (c + d) (e + f)	
4	$h=\frac{83a+2b^4}{\sqrt{c}-4}$	
5	ac + 45 - 20 x 7	

(5marks)

Q2 Write a single C++ statement or line that accomplishes each of the following:

(a) Print the message "Enter two numbers".

(1 mark)

(b) Assign the multiplication of variables b and c to variable a.

(1 mark)

(c) State that a program performs a payroll calculation (i.e., use text that helps to document a program.

(1 mark)

(d) Input three integer values from the keyboard into integer variables a, b and c.

(1 mark)

(e) Add y with 2, double it and stored into x.

(1 mark)

Q3 Write the output generated by each code block. "No output" is a valid response.

(a)
```
char option = 'd';
if(option == 'a')
{
cout << "add record";
}
if(option == 'd')
{
cout << "delete record";
}
```

Output

(b)
```
int grade = 45;
if(grade >= 70)
{
cout << "passing" << endl;
}
if(grade < 70)
{
cout << "dubious" << endl;
}
if(grade < 60)
{
cout << "failing" << endl;
}
```

Output:

(c)
```
int g = 45;
cout << "g: " << g << endl;
if(g = 70)
cout << "at cutoff" << endl;
cout << "g: " << g << endl;
if(g = 1)
cout << "you get one" << endl;
cout << "g: " << g << endl;
```

Output:

(d)
```
char input = 'q';
switch(input)
{
case 'A':
cout << "one";
break;
case 'D':
cout << "two";
break;
case 'Q':
```

```
cout << "three";
break;
default:
cout << "four";
}
```

Output:

(2 marks)

Q4 Evaluate the following expressions. Use a decimal point to distinguish integer and floating point results. "Error" is a valid response.

Assume these declarations precede these expressions:

```
double x = -7.4;
double y = 10.0;
double z = 2.5;
```

(a) 5 / 2 = 2
(b) pow(y, 3)
(c) sqrt(x
(d) fabs(x+2)
(e) fabs(x)+2
(f) pow(ceil(x), floor(z))

(3 marks)

Q5 Identify and correct the error(s) in each of the following:

(a)

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

(2 marks)

b)

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

(2 marks)

c)

```
int x = 1, total;

while ( x <= 10 )
{
  total += x;
  ++x;
}
```

(2 marks)

d)

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

(2 marks)

e)

```
while ( y > 0 )
{
  cout << y << endl;
  ++y;
}
```

(2 marks)

Q6 Given the following C++ program:

```
#include <iostream>
using namespace std;
int main()
{
    int x = 8;
    while (x < 16)
        if ((x++) % 2 == 0)
            cout << x << endl;
    return 0;
}
```

(a) Rewrite the above code segment by using *do...while* statement.

(2 marks)

(b) What is the output of the above code segment?

(2 marks)

(b) How many times the loop repeats?

(1 mark)

Q7 Assume i = 1, j = 2, k = 3 and m = 2. What does each statement print?

(a) cout << (i == 1);
(b) cout << (j == 3);
(c) cout << (i >= 1 && j < 4);
(d) cout << (m <= 99 && k < m);
(e) cout << (j >= i || k == m);
(f) cout << (k + m < j || 3 - j >= k);
(g) cout << (!m);
(h) cout << (!(j - m));
(i) cout << (!(k > m));
(j) cout << (k > m);

(5marks)

Q8 Given the following C++ program:

```
#include <iostream>
using namespace std;

int main()
{
    for (int iLoop=1; iLoop<=100; iLoop*=3)
        cout << iLoop << endl;

    system("PAUSE");
    return 0;
}
```

Program 1

What is the output of the following Program 1?

(5 marks)

Q9 Convert this *do..while* loop to *for* and *while* loop that prints out the odd numbers 1 through 99, separated by a blank space.

```
int x = 1;
      do {
          cout << x << "       ";
          x = x+2;
         }
         while (x <= 99);
```

Program 2

(5 marks)

Q10 Given the following C++ program:

```
#include <iostream>
using namespace std;

int main()
{
    int number, total=0;
    cout << "Enter a number from 1 to 9: ";
    cin >> number;

    switch(number)
    {
        number++;
        case 1: ++number;
                cout<<total;
                break;
        case 2: total=2;
                cout<<total;
                ++number;
        case 4: total+=4;
                cout<<total;
                break;
        case 8: total-=3;
                cout<<total;
                number--;
                break;
        default: total*=2;
                 cout<<total;
    }
    cout<<endl;
    system("PAUSE");
    return 0;
}
```

Program 3

(a) What is the output if *number=1*?

(1 mark)

(b) What is the output if *number=2*?

(1 mark)

(c) What is the output if *number=4*?

(1 mark)

(d) What is the output if *number=8*?

(1 mark)

(e) What is the output if *number=3.5*?

(1 mark)

SECTION C (40 MARKS)

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

Q1 Draw **flowchart** and write a complete **C++ program** to identify the grade for subject BFC 20802 (Computer Programming) based on the assessments as listed in Table **1** while Table **2** is the input from the user. The final mark for this subject will be calculated based on the SIX (6) assessments input marks. Based on this final mark, the program will display a grade. The grade scales are as tabulated in Table **3** (Example of Output: refer to Figure **Q1**).

Hint:
Your program should implement the loops and decision statements to produce the required outputs.

(20 marks)

Q2 Draw a suitable **flowchart** and write a **C++** program that reads five (5) numbers (each between 1 and 30). Assume that the user enters only valid values. For each number that is read, your program should print a line containing that number of adjacent asterisks (*). For example, if your program reads the number 7, it should print *******.

(20 marks)

Q3 A parking garage charges a RM2.00 minimum fee to park for up to three hours. The garage charges an additional RM 0.50 per hour for each hour or part thereof in excess of three hours. The maximum charge for any given 24-hour period is RM 10.00. Assume that no car parks for longer than 24 hours at a time.

Draw a suitable **flowchart** and write a **C++ program** that calculates and prints the parking charges for each of three customers who parked their cars in this garage yesterday. You should enter the hours parked for each customer. Your program should print the results in a table format and should calculate and print the total of yesterday's receipts. The program should use the *function calculateCharges ()* to determine the charge for each customer. Your outputs should appear in the following format: (Example of Output: refer to Figure **Q2**).

(20 marks)

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

(a) 3 prototype function: *int getInteger(void)*, *float calcAverage(int a, int b, int c)* and *void dispAverage(float avg)*

(b) main() function that needed to ask an input of three numbers from user.

(c) 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 QUESTION -

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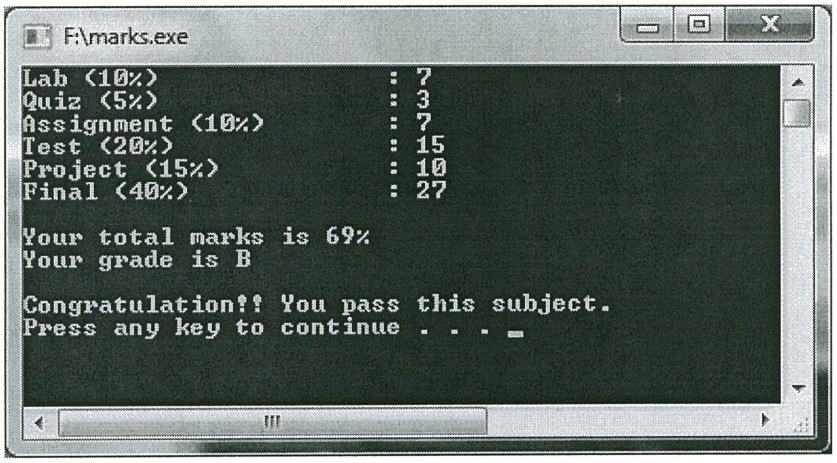

FIGURE Q1

Car	Hours	Charge
1	1.5	2.00
2	4.0	2.50
3	24.0	10.00
TOTAL	29.5	14.50

FIGURES Q2

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TABLE 1

Assessments	Percentage (%)
Lab	10
Quiz	5
Assignment	10
Test	20
Project	15
Final	40
Total	**100**

TABLE 2

Assessments	Marks
Lab	7
Quiz	3
Assignment	7
Test	15
Project	10
Final	27

TABLE 3

Grade	Percentage (%)
A+	85 - 100
A	80 - 84
A-	75 - 79
B+	70 - 74
B	65 - 69
B-	60 - 64
C+	55 - 59
C	50 - 54
C-	45 - 49
D	40 - 44
E	39 - 0