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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016**

COURSE NAME : COMPUTER PROGRAMMING
COURSE CODE : BNR 20803
PROGRAMME CODE : BND
EXAMINATION DATE : JUNE / JULY 2016
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF SIX(6) PAGES

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Q1 (a) Computer can be defined as a machine that manipulate data based on a list of instruction.

- (i) Describe the category of computer and their definition. Includes in your answer two examples for each category described. (5 marks)
- (ii) Memory is one of the computer basic components. Discuss the types of memory in computer hardware with their function and the examples. (3 marks)
- (iii) State the function of register in the central processing unit (CPU) (1 marks)

(b) A written C++ code are given below

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

int main()
{
    int x=4, y=3, z=8, sum=41;

    x *= 7 + z;
    y += z * x;
    z = (x < y ? z : x + y);

    sum -= 5 + ++z * x--;

    cout << "\nThe sum is \t" << sum << endl;
    cout << "\nValue x =\t" <<a;
    cout << "\nValue y =\t" <<b;
    cout << "\nValue z =\t" <<c;

    return 0;
}
```

Estimate the value of x, y, z and sum by showing detailed calculation. Illustrate the exact display if the program is executed on computer screen.

(11 marks)

Q2 (a) Briefly explain the following computer programming terms:

(i) Assemblers (1.5 marks)

(ii) Machine language (1.5 marks)

(b) In control structure, several option can be implemented, either using selection or repetition, to manipulate the flow of the program. However, break, continue and goto keyword can also be used to control the program flow, with certain restriction. Discuss in detail, the function of the keyword, where it can be implemented and the limitation of all **THREE (3)** keyword mentioned. (9 marks)

(c) The following program has errors

```
/*program that categorize your number
#include <iostream>
Using namespace std;

int main(
{

    int x, count = 0
    float sum = 0.0;
    cout<<"Enter some integers:\n(Break with any letter)"<< endl;

    while( cin << x )
    {
        sum += x;
        +count;
    }

    cout < "The average of the numbers: "<< sum / count << endl;
    return 0;
}
```

Identify the errors and rewrite the correct program code. (8 marks)

- Q3** (a) In computer programming, there is a set of design procedures or steps that are commonly implemented to achieve an optimal program development which is called program development cycle.
- (i) Draw a diagram that represents the flow of program development cycle
(2.5 marks)
- (ii) Explain briefly each of the step described in above question **Q3(a)(i)**
(2.5 marks)
- (b) Develop the flowchart for a program that calculate the sum of maximum number and minimum number from three different input integer value. Program must also display the sum at the end.
(15 marks)

- Q4** As a computer engineer in small programming supplier company, you need to design and develop C++ program that calculate total and average score of four subjects. Program will display grades, total score and the average score.

The program must call **THREE (3)** separate functions for *total*, *average* and *grade* (specific function for grade display), which will be linked to the main program. Input of four subject scores and output of total and average score should be included in the main program. Everything else are completed in separate function as mentioned above.

The grading system is based on the average score. If the average score is equal to or greater than 80, it is classified as EXCELLENT. If the average score is less than 80 and equals or greater than 50, it is classified as GOOD. Grade will display FAIL if average score is less than 50.

- (a) Design the flowchart to represent the program describe above.
(7 marks)
- (b) Based on question **Q4(a)**, write the C++ program code.
(13 marks)

- Q5** (a) Most of the time, programming instruction manipulate data. Which means that, data plays an important role in programs. Discuss the types of data available. that can be used in the computer programming. (7 marks)
- (b) (i) State the definition of an array. (2 mark)
- (ii) Given the display output in figure **Q5(b)(ii)**, write the C++ program that can display that output screen when the program is executed. (6 marks)
- (c) String are part of an array, but, in the form of 1-dimensional array of character, instead of numbers. In the following program show C++ code for one function.

```
#include <iostream>
#include <cstring>
#include <ctype.h>
using namespace std;

int main()
{
    char name[19]={'m','u','h','a','m','m','a','d',' ','i','r','f','a','n'};
    int a;

    for(a=0;name[a]!='\0';a++)
        name[a]=toupper(name[a]);

    cout<<"Hi! "<<name<<endl;
}
```

Determine an output display when the C++ code is executed on the computer.

(5 marks)

- END OF QUESTION -

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Square of [0]: 0
Square of [1]: 1
Square of [2]: 2
Square of [3]: 3
Square of [4]: 4
Square of [5]: 5

FIGURE Q5(b)(ii)