# UTHM
Universiti Tun Hussein Onn Malaysia

# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## FINAL EXAMINATION
## SEMESTER I
## SESSION 2019/2020

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|---|---|---|
| COURSE NAME | : | COMPUTER PROGRAMMING |
| COURSE CODE | : | BNJ 20802 |
| PROGRAMME CODE | : | BNG / BNK / BNL / BNM |
| EXAMINATION DATE | : | DECEMBER 2019 / JANUARY 2020 |
| DURATION | : | 2 HOURS |
| INSTRUCTION | : | ANSWERS **ALL** QUESTIONS |

TERBUKA

FOUR 4

THIS QUESTION PAPER CONSISTS OF ~~TEN (10)~~ PAGES

**Q1**  (a)  A computer can be define as a machine that manipulate data based on a list of instructions called program. Computer consist of hardware and software. The physical part of computer is called computer hardware.

   (i)   Describe the main hardware components of a computer and include the diagram to support your explanation.

   (7 marks)

   (ii)  Briefly explain the following computer programming terms:

   - Operating system
   - Low-level programming language

   (4 marks)

   (iii) State the differences between pseudocode and flowchart

   (4 marks)

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

```cpp
#include <iostream> using namespace std;
int main()
{
    int a=5, b=7, c=9, d=3, sum=7;

    a += 5 - b;
    d = c %= 2;
    sum *= 5 % b++ + c / ++d;

    cout << "\nThe sum is \t" << sum << endl;

    cout << "\nValue a =\t" <<a--;
    cout << "\nValue b =\t" <<b;
    cout << "\nValue c =\t" <<++c;
    cout << "\nValue d =\t" <<d;

    return 0;
}
```

   Calculate the final value of a, b, c, d and sum by showing detailed calculation. Then, illustrate the output display if the program is executed on computer screen.

   (10 marks)

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**Q2**   Equations below is used to solve a mathematical problem. Answer question **Q2(a)** and **Q2(b)**.

$$a=1, b=2, c=2, y=1$$
$$x = 2\,a + 3\,b * 4\,c$$
$$y\ *= 8\,b\ -\ ++c$$
$$z = x/2 + y$$

(a)   Write a complete C++ programming code to print the output value of $z$ for the equation.

(8 marks)

(b)   Provide the output value of $z$ with work path.

(7 marks)

(c)   Suggest output display for the code given below.

```
Int main()
{ int i=2; float j=4;
cout<< i++ << i << j++ << j << j+i;
}
```

(6 marks)

(d)   The following program has errors.

```
#includes <iostream>
using namespace std
int processfunc(int x, int y);

int main(){
  int a,b,c,;
  cout>>"\nPlease enter two values\n";
  cin>>a;
  cin>>B;
  d=processfunc(a,b);

  cout << "output = " << c;
  return 0;

int processfunc(int x, int y){
  int w; w = x * y / 2
  return w;
}
```

Identify the errors and rewrite the correct program code. Use double slash to comment on the corrected coding line.

(4 marks)

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**Q3**   As a safety engineer in a car manufacturing company, you need to develop a simple system or program that detect or sense the car crash and immediately deploy an airbag when crash occur at the speed equal or faster than 40km/h. If an accident (crash) happen at speed slower than 40km/h, an airbag will not deploy. However, both condition of the crash will turn ON hazard light automatically. For practicality of the program development, assume crash detector as 1 when crash is detected and 0 for otherwise (no crash is detected) while airbag is 1 for an airbag deployment and 0 for no airbag deployment

(a)   Analyze the input, output and write a simple pseudocode of based on this system

(4 marks)

(b)   Prepare the flowchart for this system.

(7 marks)

(c)   Construct the C++ program based on your flowchart in question **Q3(b)**

(14 marks)

**Q4**   (a)   Based on the code below, anticipate and write the suitable output that will be displayed on screen.

```cpp
#include <iostream>
using namespace std;
int main( )
{
    int count = 0x0, i = 0b00001;
    while (i <100)
    {
        count = count + i;
        i++;
        cout << "\n count :" << count;
    }
return 0;
}
```

(5 marks)

(b)   Explain the function of **call by reference** in C++ program. Use C++ code as example.

(10 marks)

(c)   Using a function named Add_Number(), write a C++ program that receive input score, calculate total and average within the function and then display average score in main( ).

(10 marks)

- END OF QUESTIONS -

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