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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

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

COURSE NAME : COMPUTER PROGRAMMING  
COURSE CODE : BEC10102  
PROGRAMME : BACHELOR OF ELECTRONIC  
ENGINEERING WITH HONOURS  
EXAMINATION DATE : DECEMBER 2015 / JANUARY 2016  
DURATION : 2 HOURS  
INSTRUCTION : (i) ANSWER ALL QUESTIONS IN  
PART A AND ONE QUESTION  
FROM PART B.  
  
(ii) WRITE ALL ANSWERS USING  
BLUE/BLACK INK PEN. ANY  
ANSWERS WRITTEN IN PENCIL  
WILL NOT BE GRADED.

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

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**INSTRUCTION:** Write **all** answers **using** blue/black ink pen. Any answers written using pencil will **not** be graded.

**PART A: Answer all questions.**

**Q1** (a) You are given with the following declaration.

```
char string15[16];
```

Mark the following statements as valid or invalid.

- (i) strcpy (string15, "Hello there");
- (ii) cout<< strlen (string15);
- (iii) string15= "Batu Pahat";
- (iv) if (string15>= "Good day")  
cout<<string15;
- (v) string15[6]='t';

(5 marks)

(b) With the aid of diagram, explain the following C++ statement.

```
char s2[4] = "abc";
```

(5 marks)

(c) Write C++ statements to do the following. Please note that all questions are related.

- (i) Declare an array *alpha* consists of 15 components of type int.
- (ii) Output the value of the tenth component of the array *alpha*.
- (iii) Set the value of the fifth component of the array *alpha* to 35.
- (iv) Set the value of the ninth component of the array *alpha* to the sum of the sixth and thirteenth components of the array *alpha*.
- (v) Set the value of the fourth component of the array *alpha* to three times the value of the eight components minus 57.
- (vi) Output *alpha* so that five components per line are printed.

(15 marks)

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- (d) You are given with the following fragment code. Please keep in mind that the given code should perform the task as described in the program description. Assume that all required headers are defined correctly. Please note that all codes are related.

```
//Program Q1
#include <iostream>
using namespace std;

int main()
{
    /*declare an integer-type variable named i and a constant
    integer-type named N with value of 4 */
    int i;
    const int N 4;

    /*declare & initialise an integer-type array named j with
    size of N which holds 1, 3, 5, and 9 */
    int j[]= 1, 3, 5, 9;

    /*display all elements of array j in descending order in
    one line which each element of array j is separated by a
    blank space.*/
    for (i=N; i!=0; i++)
        cout<<j(i)<< " ";

    return 0;
}
```

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- (i) Without considering the correctness of the given code, predict the output of the program based on the program description.  
(3 marks)

- (ii) However, the program is unable to produce the expected output because it contains several errors; three syntax and three logic errors. Point out the errors by listing the errors based on its categories in **Table Q1(d)(ii)**.

Table Q1(d)(ii) List of syntax errors and logic errors in Program Q1

Syntax errors	Logic errors

(6 marks)

- (iii) Fix the errors that you have identified in Q1(d)(ii).  
(6 marks)

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- Q2** (a) Identify correct answer from the bracket for (i) to (v).
- (i) The keyword \_\_\_\_\_ means that a function will not return a value to the module that called it. (void/return)
  - (ii) Information is returned from the function to the calling portion of the program via the \_\_\_\_\_ statement. The statement also causes the program logic to return to the point from which the function was accessed. (void/return)
  - (iii) A function definition has two principal components: \_\_\_\_\_ (function header/function call), and \_\_\_\_\_ (function prototype/function body).
  - (iv) Function \_\_\_\_\_ is the remainder of the function definition. It contains a compound statement that defines the action to be taken by the function. (body/head)
  - (v) You are given with the first line of function definition as follows.

```
int EvenOdd (int num)
```

It means that:

- The name of the function is \_\_\_\_\_ (EvenOdd/num).
- It receives a(n) \_\_\_\_\_ (actual parameter/formal parameter) integer-type named \_\_\_\_\_ (EvenOdd/num) from the caller function.
- Then, the function \_\_\_\_\_ (returns/does not return) a value of \_\_\_\_\_ (int-type/void-type) to the caller.

(10 marks)

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- (b) Complete the following program with C++ statement for Q2(b)(i) to Q2(b)(iii) based on program description.

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

_____ ; /* Q2(b)(ii) Fill in with C++ code to
           declare FindSmallNum function.(3 marks) */
int WhichNum (int arrayNum[]); //declares WhichNum function

int main()
{
    FindSmallNum(); //Call FindSmallNum function
    return 0;
}

/* -----FindSmallNum Function -----*/

_____ FindSmallNum() /* Q2(b)(i) Fill in with C++
                       code the return-type of
                       FindSmallNum. (2 marks)*/
{
    int smallest=0;
    int arrayNum[5];
    int i;

    /* Loop five times to read input, and store it in the
    arrayNum. */
    for (i=0; i<5; i++)
    {
        cout<< "Insert an integer number: " << endl << i+1
        << ": ";
        cin>>arrayNum[i];
    }
}
```

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```
/*Loop to display all elements in arrayNum*/
cout<<"You have entered the following integer
      numbers"<<endl;
for (i=0; i<5; i++){
    cout<<arrayNum[i];
}
cout<<endl;

/*Q2(b)(iii) Fill in with C++ code to call the
WhichNum function; and transfer the whole element of
arrayNum to WhichNum. (4 marks)*/
smallest = _____;

/*Display the smallest number*/
cout<< "The smallest number = " << smallest;
}
```

(9 marks)

- (c) You are given with the following fragment code.

```
int WhichNum (int arrayNum[])
{
    int small;

    //set the initial value for small
    small=arrayNum[0];

    /*Q2(c) Fill in C++ code to determine the smallest
number in the arrayNum and store the smallest value
of arrayNum in the variable named small.*/

    return small;
}
```

Based on the program description in Q2(c), answer (i) and (ii).

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- (i) Design an algorithm for Q2(c).

(11 marks)

- (ii) Write C++ fragment code that represents the design in Q2(c)(i).

(10 marks)



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**PART B: Answer ONE question only.**

**Q3** Given the following program. Answer (a) and (b) by referring the following C++ fragment code. Assume all headers and identifiers are declared correctly.

```
/*Line 1*/   int rulingyear;
/*Line 3*/   cout << "Enter the ruling year: ";
/*Line 4*/   cin >> rulingyear;
/*Line 5*/   cout << rulingyear << endl;
/*Line 6*/   if (rulingyear >= 2009 )
/*Line 7*/       cout << "YAB Najib Razak-Father of Transformation"
                << endl;
/*Line 8*/   else if (rulingyear >= 2003 )
/*Line 9*/       cout << "Tun Abdullah Ahmad Badawi-Father of Human
                Capital Development" << endl;
/*Line 10*/  else if (rulingyear >= 1981 )
/*Line 11*/  cout   <<   "Tun   Mahathir   Mohamad-Father   of
                Modernisation" << endl;
/*Line 12*/  else if (rulingyear >= 1976 )
/*Line 13*/  cout << "Tun Hussein Onn-Father of Unity" << endl;
/*Line 14*/  else if (rulingyear >= 1970 )
/*Line 15*/  cout << "Tun Abdul Razak Hussein-Father of
                Development" << endl;
/*Line 16*/  else
/*Line 17*/  cout   <<   "Tunku   Abdul   Rahman-Father   of
                Independence" << endl;
```

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**INSTRUCTION:** Write **all** answers **using** blue/black ink pen. Any answers written using pencil will **not** be graded.

- (a) Design an algorithm by using flowchart for the provided code in Q3.  
(15 marks)
- (b) Predict the outputs that will be displayed by this source code if the inputs for variable *rulingyear* are:
- (i) 1979
  - (ii) 20
- (5 marks)

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**Q4** (a) Design an algorithm using flowchart for the following C++ fragment code.

```
int main(){
    int j, w;
    float a;
    w=3;
    while (w!=0){
        for(j=0; j<w; j++){
            cout<<"Enter integer numbers. Press 0 to stop.";
            cin>>a;

            if(a==0)
                exit(1);
            cout<<a*pow(a,3)<<endl;
        }
        w--;
    }
    return 0;
}
```

(15 marks)

(b) The following fragment code should display all even integers range from 2 to 100 on the screen.

```
int counter=0;
Do{
    counter+=2;
    cout<<counter<<endl;}
While (Counter != 100)
```

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However, there are five syntax errors in the code which causes it for not producing the expected result. Therefore, examine the code to identify the errors.

(5 marks)

- END OF QUESTIONS -