Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2014/2015

COURSE NAME	:	COMPUTER PROGRAMMING
COURSE CODE	:	BEC10102
PROGRAMME	:	BEJ / BEV
EXAMINATION DATE	:	JUNE 2015 / JULY 2015
DURATION	:	2 HOURS
INSTRUCTIONS	:	(i) ANSWER **ALL** QUESTIONS IN **PART A**. ANSWER **ONE** QUESTION IN **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 **TEN (10)** PAGES

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* of 15 components of type int.

(2 marks)

(ii) Output the value of the tenth component of the array *alpha*.

(2 marks)

(iii) Set the value of the fifth component of the array *alpha* to 35.

(2 marks)

(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*.

(2 marks)

(v) Set the value of the fourth component of the array *alpha* to three times the value of the eight components minus 57.

(2 marks)

(vi) Output *alpha* so that five components per line are printed.

(5 marks)

(d) Consider the program in **Figure Q1(d)**. Please note that the given code should perform the task as described in the program description. Answer (i) to (iii).

(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 list the errors based on its categories in **Table Q2(d)**.

Table Q2(d) List of syntax and logic errors in Program Q1(d)

Syntax errors	Logic errors

(6 marks)

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

(6 marks)

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```
#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;
}
```

FIGURE Q1(d)

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Q2 (a) Identify correct answer 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)

(5 marks)

(b) You are given with the first line of function definition as follows.

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

Explain briefly the meaning of the instruction.

(5 marks)

(c) Write C++ statements for Q2(c)(i) to Q2(c)(iii) based on program description in **Figure Q2(c)**.

(9 marks)

(d) Consider the fragment code in **Figure Q2(d)**. Answer (i) and (ii). Please note that C++ code in Figure Q2(c) and Figure Q2(d) are related.

(i) Design an algorithm for Q2(d) based on its program description.

(11 marks)

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

(10 marks)

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

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

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

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

_____ FindSmallNum() /* Q2(c)(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];
  }
```

FIGURE Q2(c)

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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;

   smallest = _______ ; /*Q2(c)(iii) Fill in with C++ code to call the
                        WhichNum function; and transfer the whole element
                        of arrayNum to WhichNum.
                                                          (4 marks)*/
   /*Display the smallest number*/
   cout<< "The smallest number = " << smallest;
}
```

FIGURE Q2(c) continued

```
/* ---------------------- WhichNum Function -------------*/
int WhichNum (int arrayNum[])
{
  int small;

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

  /*Q2(d) 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;
}
```

FIGURE Q2(d)

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PART B: Answer ONE question only.

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

(a) Design an algorithm by using flowchart for the code in **Figure Q3**.

(15 marks)

(b) Predict the outputs that will be displayed when executing the code if the inputs for variable *rulingyear* are:

(i) 1979

(ii) 20

(5 marks)

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

(15 marks)

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

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

However, there are five syntax errors in the code. Examine the code to identify the errors.

(5 marks)

- END OF QUESTIONS -

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```
/*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;
```

FIGURE Q3

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```
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;
}
```

FIGURE Q4