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FINAL EXAMINATION

COURSE NAME	:	**ENGINEERING SOFTWARE**
COURSE CODE	:	**DEG 2123**
EXAMINATION	:	**APRIL 2018**
DURATION	:	**3 HOURS**

INSTRUCTION TO CANDIDATES

1. This examintaion paper consists of **TWO (2)** parts :   PART A (60 Marks)

    PART B (40 Marks)

2. Candidates are not allowed to bring any material to examination room except with the permission from the invigilator.

3. Please check to make sure that this examination pack consist of:
    i.   Question Paper
    ii. Answering Booklet

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

*This examination paper consists of **8** printed pages including front page*

PART A

This part contains of **six (6)** questions. Questions **Q1** to **Q4** will be based on C++ programming and Question **Q5** to **Q6** will be based on Matlab programming. **Answer All Questions**. Answer the questions in **Answering Booklet**.

QUESTION 1

a. List the step for executable the c++ coding to machine language?

(3 marks)

b. Identify the type of component hardware computer?

(4 marks)

c. Identify the type of data for a number with fractional.

(3 marks)

QUESTION 2

a. The function coding in below have an error to execute. Rewrite a correctly the function coding for solve an error.

(6 marks)

```
#include <iostream>
#include <conio>
Int multiply (int num1, int num2);
int main ( )
{
    char  multiplier, multiplicand, product;
    cout << "Enter two integers:";
    cin << multiplier <<multiplicand;
    product = =multiply (multplier, multiplicand);
    cout <<"Product of " << multiplier << " &" << multiplicand

        <<" is "            << product;

getch;

}

int multiplier (int num1, int num2)

{

return (num1 * num2);

}
```

b. Predict the output function coading in **Question 2 (a)**?

(4 marks)

QUESTION 3

Demostrate the output produced by each of the following programs:

a. Program Q3(a)   (3 marks)

```cpp
#include<iostream>
int main()
{
    int a[10];
    for(int i=0;i<10;i++)
    {
        cout << "Enter a number\n";
        cin >> a[i];
    }
    cout << "Numbers are:\n";
    for(int i=0;i<10;i++)
    {
        cout << a[i] << "\n";
    }
 return 0;
}
```

b. Program Q3(b)   (3 marks)

```cpp
#include<iostream>

int main()
{
    int z[5];
    int pos = 0;
    int neg = 0;
    int odd = 0;
    int even = 0;
    int zero = 0;
    for(int i=0;i<5;i++)
    {
        cout << "Enter a number\n";
        cin >> z[i];
```

```
    if(z[i]>0)
       pos++;
    else if(z[i]<0)
       neg++;
    else
       zero++;
    if(z[i]%2==0)
       even++;
    else
       odd++;
  }
  cout << "Positive " << pos << "\nNegative " << neg <<"\nZero "<<zero<<"\nOdd "<
<odd<<"\nEven "<<even<<"\n";
  return 0;
}
```

c. Program Q3(c)   (4 marks)

```
#include<iostream>
int main()
{
   int a[10], b[10];
   for(int i=0;i<10;i++)
   {
      cout << "Enter a number\n";
      cin >> a[i];
   }
   int j = 0;
   for(int i=9;i>=0;i--)
   {
      b[i] = a[j];
      j++;
   }
   for(int i=0;i<10;i++)
   {
      cout << b[i] << "\n";
   }
   return 0;

}
```

QUESTION 4

Fill in the blank the correct syntax in a program shown below:

a. Program Q4(a)

(5 marks)

```
#include <iostream.h>
        (a)     : Nest
    {
        (b)     :

        (c)      Display
        {
        (d)     :

        int s;
        (e)     :
        void sum( int a, int b)
            {
                s =a+b;
            }
        void show( )
            {
        cout << "\nSum of a and b is:: " << s;
            }
        };

    };
```

b. Program Q4(b)

(5 marks)

```
#include <iostream.h>
 #include <conio.h>
    (a)     Value
    {
        (b)     :
        int val;
                (c)     :

        void set_values (int a)
        { val=a;}
    };
            (d)     Square: public Value
    {
        (e)         :

int square()

        { return (val*val); }
```

```
int main ()

{

Square sq;

sq.set_values (5);

cout << "The square of 5 is::" << sq.square() << endl;

getch();

return 0;

}
```

QUESTION 5

a. Define of syntax Matlab by each of the following general function below:

(8 marks)

       i)   whos:

      ii) clear:

     iii) cd:

     iv) dir:

      v) pwd:

     vi) echo:

    vii) format:

   viii) diary(filename):

b. Identify of syntax help function in Matlab.

(2 marks)

QUESTION 6

Write an instruction in MATLAB to do following task:

a. Clear the variable b.

(2 marks)

b. Clear all information the workspace.

(2 marks)

c. Create a logarithmically (log 10) spaced row vector k starting with 0.001 ending with 1000 and having 50 element.

(4 marks)

[60 MARKS]

PART B

This part contains of **Two(2)** questions. Questions **Q7** will be based on C++ programming and Question **Q8** will be based on Matlab programming.
Answer All Questions. Answer the questions in **Answering Booklet**.

QUESTION 7

a. Write a program to find greatest common divisor (GCD) or highest common factor (HCF) of given two numbers.

(8 marks).

b. Write a program to find prime factor of a number. If a factor of a number is prime number then it is its prime factor.

(12 marks)

QUESTION 8

a. Write a program to calculatate area of trapezoidal, rectangular, triangular and circular using a Matlab function coding.

(15 marks).

b. Based on Q8 **(a)**, Demostrate the results.

(5 marks).

[40 MARKS]

END OF QUESTION PAPER