B.E. INSTRUMENTATION AND ELECTRONICS ENGINEERING EXAMINATION
(1ST YEAR 2ND SEMESTER – 2018)

NUMERICAL METHODS & COMPUTER PROG.

Time: Three Hours **Full Marks: 100**

1 Write the output of the following program snippets and ***justify*** them in brief :

i)
```
#include<stdio.h>
 void main( )
 { int i ;
 for (i = -3.8; i < 19; i )
 {switch ( i )
       { default : i += 4;break;
      case 0 :  i += 5;
      case 1 :  i += 2;
      case 2 :  i += 5;
       }printf ("::%d\n", i);
 }}
```

ii)
```
#include<stdio.h>
int p;
void FX()
 { static int i;
   extern int p;p=5;
   printf("%d,%d\n",++p,++i+p);
 }
 main()
 { int p=10;
   FX();FX();FX();
 }
```

iii)
```
#include<stdio.h>
main( )
 { int count = -53;
   int *temp, sum = 0;
   temp = &count;*temp = 12;
   temp = &sum; *temp = count;
   printf ("%d %d %d", count,
                    *temp, sum);
 }
```

iv)
```
#include <stdio.h>
main( )
{int i,a[10];
for(i=0;i<10;i++) a[i]=i+4;
for(i=0;i<5;i++)
 if (i==3)
  {printf(":%x:",(2*i)[a]);
   break;}
}
```

v)
```
void main( )
{
 int y=-23;
 int c = y+ (y = 10)*3.5;
 printf("%d-%d\n",c,y);
}
```

vi)
```
int main()
{  int i = 256;
   for (; i/2; i >>= 1);
    printf("%d",i);
   return 0;
}
```

vii)
```
#include<stdio.h>
main()
{
 char txt[5];
 printf("%d", sizeof(txt));
}
```

viii)
```
#include<stdio.h>
main( ){
 int i=5, j=2; float a, b=2, c;
 a=i/j; c=i/b;
 printf("%f %f\n", a, c);
}
```

ix)
```
void main( )
{
  int a=6,b=9;
  printf("%d %d",a,b);
  a=a+b;
  b=a-b;
  a=a-b;
  printf("%d %d",a,b);
}
```

x)
```
#include <stdio.h>
int Strf(char *str1)
{ char *str2 = str1;
while(*++str2);
return (str2-str1);}
int main()
{ char *str = 3+"Neumeri\0cal&C";
printf("::%d::", Strf(str));
return 0;}
```

10×2 = 20

2 **Answer any two**

a) Write a program in C to display the following pattern. Input the number of lines 'n' from user:

```
*
* * *
* * * * *
* * *
*
```

b) Write a program in C to find all possible (real, imaginary) roots of a quadratic equation.

c) Write short notes on the following with suitable examples.
   i) *break* and *continue* statement in C
   ii) Storage class in C.

10+10=20

3 **Answer any two**

a) Write a C program to find the multiplication of two matrices.

b) Write a program in C to implement string concatenation and string comparison without using <string.h >

c) Write short notes on the following with suitable examples.

i) Recursion in C

ii) Call-by-value and call-by-reference in C.

10+10=20

4 **Answer any one**

a) Declare a structure to store the following information of a Book:
{Book name, Book Accession no, Author name, Price}
Write a C program to store the data of 'n' Books, and display the list of books in ascending order by its price.

b) Write a program in C to count the number of characters, digits, words and lines from a file.

10

5 **Answer any three**

a) Briefly discuss the algorithm for method of *False Position* .

b) Using *Regula Falsi* method find $\sqrt{19}$ correct upto 5 decimal points.

c) Using *Bisection* method, find the roots of equation $xe^x = 1$ to a tolerance of 0.05
(Given, $x_0 = 0, x_1 = 1$)

d) Graphically discuss the i-th approximation of roost in Newton Raphson method

10+10+10=30

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