Q1. [Output + Syntax Error + Function Calling] [35+15+10=60]

a. Write output printed by **print** statements only? [Write output in front of relative statements only, if not mentioned] **(7x5=35)**

I.
```
int x[]={4,6,9,7,2,3,1,8};
printf("%d ", x[1] ,x[3]);
printf("%d ", x[0]+x[2] ,x[1]+x[5]);
printf("%d ", x[x[0]] ,x[x[4]]);
```

II.
```
int x[]={4,6,9,7,2,3,1,8};

printf("%d ", f1(x, 4);

printf("%d ", f1(&x[3],3);
```

```
int f1(int *x, int S){
  int s=0, i;
  for (i=1;i<S;i++) s+=x[i];
  return s;
}
```

III.
```
for (i=1;i<=3;i++)
    for (j=0;j<8;j=j+2)
      if (x[i]==y[j])
        printf("%d ", 'A');
      else
        printf("%d ", 'B');
```

```
int x[]={4,1,3,5,2,9,7,8};
int y[]={3,5,1,9,5,6,3,7};
```
//Write output of both print statements in a single line/ sequence

IV.
```
int x[3][4]={{4,1,3,5},{2,9,7,8},{3,5,1,9}};
printf("%d %d %d %d", x[1][2] ,x[0][1] ,x[2][0] ,x[2][2]);
```

V.
```
int x=34, y=49, z=29;
int *p=&x, *q=&y, *r=&z;
printf("%d %d %d ", *p ,*q ,*r);
q = r;
printf("%d %d %d ", *p ,*q ,*r);
p = q;
printf("%d %d %d ", *p ,*q ,*r);
```

VI.
```
int x[]={34,45,16,29,47,29,31,28};
int *p=&x[2], *q=&x[4];
printf("%d %d %d ", p[0] ,p[3] ,q[1]);
p = q;
printf("%d %d %d ", p[0] ,p[3] ,q[1]);
```

VII.
```
char c[26]={'A','B','C',...'Z'};
for (i=0;i<3;i++)
   for (j=1;j<4;j=j+2)
         printf("%d ",c[i*5+j]);
```

b. Declare the appropriate variables and call the following functions (consider parameters and return type): **(3x5=15)**

I. `void getPoint (int &x, int &y) {...}`

II. `int* getNonZero(int *a, int S, int &c) {...}`

III. `int diagonalSum (int x[][8], int rows) {...}`

IV. `int getHighestSumRow (int *m[], int rows) {...}`

V. `void print (Matrix &m) {...}//Matrix is a type define using struct`

c. Find syntax error, write appropriate to the point reason. Either write reason or mention "No Error" in provided blank space. Leaving blank will be considered un-attempted. **(10)**

```
int findA (int &a, int &b) {...}
```

```
printf("%d ", findA(43, 37));
```

```
int m[10]={...}
printf("%d ",printSum(m, 10);
```

```
void printSum(int x[], int S){...}
```

```
int a[4][10]={...};
printRow(a, 3);
```

```
void printRow(int x[][10], int R) {...}
```

```
int f1(int F, int S){
  if (F> S) return "First";
  else      return "Second";
}
```

```
int b[5][6]={...};
f2(b,5);
```

```
void f2(int *x[5], int R){...}
```

```
float *arr[10];
…
free(arr);
```

Write codes according to the description: (Solve any ten parts) **[10x10=100]**

a. A file "data.txt" has three numbers. Print "YES" or "NO" after checking whether first number is product of second & third number?

b. Write a function **void minmax(int a[], int size, int &min, int &max)**?

c. Consider static 2D array named "v" of size 10x10 having values in the array. Using function of previous part (b), find & print row number having maximum out of all minimum values of rows and minimum out of all maximum values of rows?

d. Consider array having marks of 1000 students. The passing marks are fifty. Write a function getPassedStudents to return two things to caller in some appropriate way:

- Count of passed students
- a dynamic array having marks of passed students with array size according to count of passed students

e. Write code in following function to print both diagonals of 2D square array. Later write main logic to declare array and call this function:

```
void printD ( int *a, int R ){
```

f. File "abc.txt" has 10000 numbers. Declare an array of size 10000. Read numbers, if any number is repeated in file, store -1 in the array at respective index. To secure full marks, create function to check repetition while reading?

g. Find average score of player. For average, count matches where player get out, if player remains not out match is not counted but score is considered. Input number of match played by player. Next input runs and out / not out for each match. For out user will enter 0 & 1 for not out. Finally, calculate & print average?

h. Binary file "point.bnr" has record of 100 points. In order to modify, point at record number six, input x, y coordinates from user and modify 6th record.

```
struct Point{
   int pNo;
   double x;
   double y;
};
```

i. `int x[20]={...}, y[10]={...};`

Write array counts and values of each array in binary file "`arr.val`". Write count of array x, followed by values array x, next count of array y, followed by values of array y. To secure full marks, write minimum possible code?

j. Write function to search pair of negative numbers (pair, means consecutive two values in array). Print all pairs in separate lines. Note if consecutive three elements are negative, they are not considered two pairs; rather third element can be paired with fourth element, if fourth element is also negative?

k. Print data in array "sem1" according to the format. First line has heading in the center. The dashes are representing spaces. We are giving information about spaces to save your from counting the dashes. In heading, there are 3 spaces after course code, 7 spaces after course title. In data, there is 1 space in start, 4 spaces after the number. :

Course Information
-No-Course Code---Course Title-------Credit Hours
---------- 	
-1----CMP 160.----Basic Electronics----------3
-2----CMP 150----Calculus II ----------3
…
	`struct Course{`
	`  string code;`
	`  string title;`
	`  int crHour;`
	`};`