NOTE: Answer only FIVE questions, each question have 10 marks

Q1: (a) Write the output of the following programs with trace:

1. # include <iostream.h>
   void main()
   { int x,y,z; x=y=6; z*=x++;
     x*=y+=z-=4; cout<<x<<y<<z; }

2. # include <iostream.h>
   void main() {
     int a=2; a>>1; a<<1; cout<<a;
     a=a^2; a=!a; cout<<a; }

(b) Write a C++ program, to apply the mathematic operation using pointer.

Q2: (a) What is the difference between:

1. (char a; char a[10]; char *a; char *a[10];)
2. (setfill setw)

(b) Write a complete C++ program to find \( X \) to power \( Y \) using recursive function.

Q3: (a) Draw a flowchart to find the G.C.D. between \( m \) and \( n \).

(b) Write a C++ program with a function to sort ascending the numbers in the array \( a[n] \).

Q4: (a) Find the errors and correct them:

1. int f; int a[3]={1,2,3}; f=&(*(a)+1;
2. char z[]=1234; cout<<slen(z);
3. int max[n];
4. int union=5;
5. if(x=0) cout<<"it is zero";

(b) Develop a program in C++ to read the following information (using structure) st_name, st_code, st_age, st_birth(year, month, day), st_class(first, second, third, fourth) for 100 student and print the name of the student that has greater than 18 years old and still in the first class.

Q5: (a) if \( x=36, y=69 \). Find \( (x<<3)+(x^y)+(x\&y) \).

(b) Create the array bellow:

```
1 3 3 3 2
4 1 3 2 5
4 4 1 5 5
4 2 6 1 5
2 6 6 6 1
```

Q6: (a) Define the conditional statement and give a suitable example for it.

(b) Write a C++ program to find the output of the following series:

\[
sum = R - \frac{x^3}{3!} + \frac{x^5}{5!} + \frac{x^7}{9!} + \frac{x^n}{(n + 2)!}
\]
\[ \frac{x}{14} \frac{x}{z} = \frac{z}{y} = \frac{1}{c} \text{ (1)} \]

\[ \frac{ax}{21} = \frac{-2}{c} \]

```
#include <iostream>

int main()
{
    int x, y, z;
    int xp, yp, zp; // cin >> x >> y >> z;
    xp = x; yp = y;
    z = xp + yp; count << 2;
    z = xp - yp; count << 2;
    z = xp * yp; count << 2;
    z = xp / yp; count << 2;
}
```

```
// define one char in memory: char a;
// define an array of 10 chars
char charArr[10];
```

```
#define porab(x, a, b)
    (b < 0) return (a);
    else return (a + porab(x, a, b-1));
```

```
main()
{
    int x = 2, y = 3;
    count << porab(x, x, y); // ...
```
Q2 (a) & (b) SetFill: used to specify a different draw to fill the unused field width of one value. SetFill(char f)

SetW: used to specify the minimum no. of char. positions on the left field. array will consume SetW(int w)

Q3 (a)

Start

int m,n

Read m,n

m < n Y

print m

n < 0 Y

n = n + 1

N

Y

N

End
R3 (b)

```c
void suc(int x[], int n);
void pros(int x[], int n)

main()
{
    const n = 10;
    int x[n], i;

    rov(1, 20, i, c10, i++)
    cin(x, y, n);
    pros(x, n);

    void pros(int x[], int n)
    {
        for (int i = 0; i < n; i++)
            cout << x[i] << endl;
    }

    void suc(int x[], int n)
    {
        for (int i = n - 1; i >= 0; i--)
            if (x[i] > x[i + 1])
            {
                int m = x[i];
                x[i] = x[i + 1];
                x[i + 1] = m;
            }
    }
```
(a)

```c
int k; in a(3), z = 3, 2, 3; i = *c(a[5]) + (1)
```

```c
2 - char z[2] = "1234" + count strlen(z);
```

```c
3 - int mat[10];
```

```c
u = int u = 5;
```

```c
s = if (c = a) count cc "it's 2000";
```

(b)

```c
typedef struct {
    int d;
    int m;
    int y;
    int st-code;
    int st-age;
    int st-date today;
    enum class & first, second, third, fourth;
} st-class;
```

```c
3 student;
```

```c
void main
```

```c
3 student array[100];
```

```c
for (i = 0; i < 100; i++)
```

```c
3 cin >> array[1][i] = st-name;
```

```c
cin >> array[1][i] = st-code;
```

```c
cin >> array[1][i] = st-age;
```

```c
cin >> array[1][i] = st-date today;
```

```c
cin >> array[1][i] = st-class;
```
\(\text{Eu}(6)\) 

\[i = 0; \quad i < 100; \quad i++\]

\[\text{if} \quad (\text{any}[\text{i}][\text{j}] - \text{st-class} \geq 18) \quad \text{any}[\text{i}][\text{j}] - \text{st-class} = \text{first}\]

\[\text{count} \quad \text{any}[\text{i}][\text{j}] - \text{st-name};\]

5/4

\[x = 36 = 2^2 \cdot 3^2 \cdot 2^2 \cdot 2^2\]

\[y = 64 = 2^6\]

\[x \cdot y\]

\[\begin{array}{c}
\text{10010000} \\
\text{00010000} \\
\text{01000000}
\end{array}\]

\[x \oplus y\]

\[\begin{array}{c}
\text{10010010} \\
\text{10001011}
\end{array}\]

\[\begin{array}{c}
\text{10000101} \\
\text{10000101}
\end{array}\]

\[\begin{array}{c}
\text{10000101} \\
\text{10000101} \\
\text{10000101}
\end{array}\]

\[\begin{array}{c}
\text{10000101} \\
\text{10000101} \\
\text{10000101}
\end{array}\]
R6 (a):

(Condition) true: \( \frac{2}{3} \)

case /

c: m \rightarrow V:

Could \( \text{CC}(V) \neq 0 \)? "POS"; "neg".

R6 (b):

\[
\text{Sum} = R = \frac{x^3 + x^5}{5!} - \frac{x^7}{7!} \quad \text{(eq. 2)}
\]

\[
\text{int} = \frac{p(x)}{m} 
\]

Great Sum:

\[
\text{Sum} = R 
\]

\[
\text{for } (i=3; i < m; i++)
\]

\[
\text{Sum} = \text{Sum} + \frac{\text{pow}(x, i)}{i!} 
\]

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