

Question 1 [6 + 4+ 2.5 + 2.5=15 Marks]

What will be the output of the given programs? In case of an error(s), circle that part in the code and mention the reason for that error(s) in one line.

S no.	Question	Output
1.1	<pre>#include <iostream> using namespace std; int a = 9; int b = 2; int *p = &a; int* func1(){ return &b; } int* func2 (int* p){ return p; } int& func2(){ return *p; } int& func3(){ return a; } int main() { int a = 4; int* p ; cout << *(func1()) << endl; p = func2(&::a); cout << *p << endl; func2() = 1; cout << ::a << endl; a= func3(); cout << a <<endl; return 0; }</pre>	2 9 1 1

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1.2.	<pre> #include <iostream> using namespace std; int main(){ char oop[] = "Object Oriented Programming"; char* pointer = oop; cout << "1. " << ++pointer << endl; cout << "2. " << ++(*oop) << endl; cout << "3. " << pointer[2] << " " << *pointer << endl; cout << "4. " << oop+5 << endl; return 0; } </pre>	<p>1. bject Oriented Programming</p> <p>2. P</p> <p>3. e b</p> <p>4. t Oriented Programming</p>
1.3.	<pre> #include <iostream> using namespace std; int main(){ void *vp; int a = 8; float b = 90.5; vp=&a; cout << *vp; vp = &b; cout << *vp; return 0; } </pre>	<p>ERROR!</p> <p>A void pointer cannot be dereferenced</p>

1.4.	<pre>#include <iostream> using namespace std; int main(){ int value = 95; int *a, b; a = &value; b = a; cout<<*b; return 0; }</pre>	ERROR! Cannot assign pointer variable to integer variable.
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Question 2 [3+3+4+5=15 Marks]

What will be the output of the given programs? In case of an error(s), circle that part in the code and mention the reason for that error(s) in one line.

S no.	Question	Output
2.1.	<pre>#include <iostream> using namespace std; int MyFunction(int s, int t) { if (t != 0){ return (s*MyFunction(s, t-1)); } else{ return 1; } } int main(){ cout<<"Output"<<MyFunction(3,4); return 0; }</pre>	81

2.2

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

int MyFunction(int n1, int n2) {

    if (n2 != 0)

        return MyFunction(n2, n1 % n2);

    else

        return n1;

}

int main(){

    cout<<"Output"<<MyFunction(366,60);

    return 0;
}
```

6

2.3

```
#include <iostream>
using namespace std;
void print_asterisk(int asterisk)
{
    if (asterisk == 0)
        return;
    cout << "* ";

    print_asterisk(asterisk - 1);
}

void print_space(int space)
{
    if (space == 0)
        return;
    cout << " "
    << " ";

    print_space(space - 1);
}

void pattern(int n, int num)
{
    if (n == 0)
        return;

    print_asterisk(n);
    print_space(2 * (num - n) + 1);
    print_asterisk(n);
    cout << endl;
    pattern(n - 1, num);
}

int main()
{
    int n = 5;
    pattern(n, n);
    return 0;
}
```

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

Question 2.4 [5 Marks]

Write a recursive function using c++ to print how many times digit 5 appear in octal representation of decimal number.

<pre>void decToOct(int n) { if(n == 0) return 0; if((n%8)==5) return 1+decToOct(n / 8); return 0+decToOct(n / 8); }</pre> <p>Change the void return type to int.</p>	<pre>int main() { int n=5; cout<<decToOct(n); //print 1 n=893; cout<<decToOct(n); //print 2 return 0; }</pre>
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Question 3 [5+5+5=15 Marks]

What will be the output of the given programs? In case of an error(s), circle that part in the code and mention the reason for that error(s) in one line.

S no.	Question	Output
3.1.	<pre>#include <iostream> using namespace std; int main() { int track[] = { 10, 20, 30, 40 }, *striker; striker = track; track[1] += 30; cout << "Striker>" << *striker << " "; *striker -= 10; striker++; cout << "Next@" << *striker << " "; striker += 2; cout << "Last@" << *striker << " "; cout << "Reset To" << track[0] << " "; return 0; }</pre>	Striker>10 Next@50 Last@40 Reset To0

3.2	<pre> #include <iostream> using namespace std; #include <stdio.h> int main() { char* str[] = { "AAAAA", "BBBBB", "CCCCC", "DDDDD" }; char** sptr[] = { str + 3, str + 2, str + 1, str }; char*** pp; pp = sptr; ++pp; cout<<*++pp + 2; return 0; } </pre>	BBB
3.3	<pre> #include <iostream> using namespace std; int main(){ const int i = 20; const int* const ptr = &i; (*ptr)++; int j = 15; ptr = &j; cout << i; return 0; } </pre>	Compilation Error: the line 3 and 5 produce error because a pointer to constant can't change value at address and address of a constant pointer can't be changed respectively

Question 4 [15 Marks]

What will be the output of the given programs? In case of an error(s), circle that part in the code and mention the reason for that error(s) in one line.

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

struct someStruct
{
    int x = 1;
    int y = 10;
    char** z;
    someStruct* ptr;
}

s1 = { 3,10,0,0 };

int main() {
    s1.z = new char* [s1.x];
    s1.z[0] = (char*)"345";
    s1.z[1] = (char*)"*&()&";
    s1.z[2] = (char*)"**ur50";

    s1.ptr = new someStruct{ 1,8 };
    s1.ptr->z = new char* [s1.ptr->x];
    s1.ptr->z[0] = (char*)"c001";

    s1.ptr->ptr = &s1;
    someStruct* s = &s1;

    do {
        cout << s->z[s->x - 1];
        s = s->ptr;
    } while (s != &s1);

    return 0;
}
```

Output:

****ur50c001**