Predict the output of following C++ programs.

Question 1

```
#include<iostream>
#include<string.h>

using namespace std;

class String
{
    char *p;
    int len;
public:
    String(char *a);
};

String::String(char *a)
{
    int length = strlen(a);
    p = new char[length +1];
    strcpy(p, a);
    cout << "Constructor Called " << endl;
}

int main()
{
    String s1("Geeks");
    char *name = "forGeeks";
    s1 = name;
    return 0;
}
```

Question 2

```
#include<iostream>

using namespace std;

class A
{
    public:
    virtual void fun() {cout << "A" << endl ;}
};
class B: public A
{
    public:
```

```
    virtual void fun() {cout << "B" << endl;}
};
class C: public B
{
    public:
    virtual void fun() {cout << "C" << endl;}
};

int main()
{
    A *a = new C;
    A *b = new B;
    a->fun();
    b->fun();
    return 0;
}
```

Question 3

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

class A {
 public:
    A(int ii = 0) : i(ii) {}
    void show() { cout << "i = " << i << endl;}
 private:
    int i;
};

class B {
 public:
    B(int xx) : x(xx) {}
    operator A() const { return A(x); }
 private:
    int x;
};

void g(A a)
{  a.show(); }

int main() {
  B b(10);
  g(b);
  g(20);
  getchar();
  return 0;
}
```

Question 4

```
#include<iostream>

using namespace std;

class Test {
    int value;
public:
    Test (int v = 0) {value = v;}
    int getValue() { return value; }
};

int main() {
    const Test t;
    cout << t.getValue();
    return 0;
}
```

Question 2

```
#include<iostream>
#include<stdio.h>

using namespace std;

class Base
{
public:
  Base()
  {
    fun(); //note: fun() is virtual
  }
  virtual void fun()
  {
    cout<<"\nBase Function";
  }
};

class Derived: public Base
{
public:
  Derived(){}
  virtual void fun()
```

```
  {
    cout<<"\nDerived Function";
  }
};

int main()
{
  Base* pBase = new Derived();
  delete pBase;
  return 0;
}
```