Semester II (B.Tech)

Er. No.....

Academic Year: 2021-22

Jaypee University of Engineering & Technology, Guna

T-1 (Even Semester 2022)

18B11CI211 – OBJECT ORIENTED PROGRAMMING

Maximum Duration: 1 Hour

Maximum Marks: 15

Notes:

1. This question paper has 05 questions.
2. Write relevant answers only.
3. Do not write anything on question paper (Except your Er. No.).

Q1. A point on the two-dimensional plane can be represented by two numbers: an 'x' coordinate and a 'y' coordinate. The Euclidian distance between two points (X_1, Y_1) and (X_2, Y_2) is given by $\sqrt{((X_2 - X_1)^2 + (Y_2 - Y_1)^2)}$. **[03]**

Write a C++ program that uses a structure called 'Point' to model a point. Define two points and take values for these two points from the user. Write a function that calculates and returns the distance between these two points. Call this function suitably from a 'main' function, and display the distance. Interaction with the program might look like this:

Enter Coordinates for Point1: 1 4
Enter Coordinates for Point2: 5 7
Distance between P1 and P2 is: 5

$n^p = n \times (p-1)$ double n static.

Q2. Raising a number 'n' to a power 'p' is the same as multiplying 'n' by itself 'p' times. Write a function called 'power()' that takes a double value for 'n' and an int value for 'p', and returns the result as a double value. Use a default argument of 2 for 'p', so that if this argument is not provided, the number 'n' will be squared. Create two overloaded functions with the same name as 'power()' so that in addition to double it can also work with types int and float. Write a 'main' function that gets values from the user to test these overloaded functions with all argument types. **[03]**

Q3. Write a C++ program to show three benefits of reference variables in comparison with the pointer variables. **[03]**

Q4. Predict the outputs of the following C++ programs: (provide the justification for your answers) **[03]**

(a)

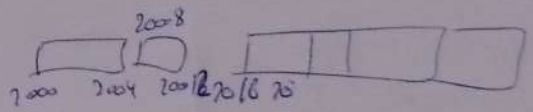
```
#include<iostream>
using namespace std;
void show( unsigned char a)
{
        cout<<" unsigned char "<<endl;
}
void show(unsigned int a)
{
        cout<<" unsigned int "<<endl;
}
int main()
{
   show('A');
   return 0;
}
```

(b)

```
#include <iostream>
using namespace std;
#define JUET main
int JUET()
{
  cout<<"Hello JUET Guna!";
  return 0;
}
```

(c)

```
#include<iostream>
using namespace std;
int main()
{
   char c[] = "Hi JUET";
   char *p =c;
   cout<<p+p[3]-p[0]+1 ;
   return 0;
}
```



Q5. Explain following terms with examples:

- **(a)** Inheritance
- **(b)** Polymorphism
- **(c)** Encapsulation