C5-R3: OBJECT ORIENTED METHODOLOGY

NOTE:

> 1. **Answer question 1 and any FOUR questions from 2 to 7.**
> 2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.

a) What Integer method can you use to convert an integer into a string that expresses the number in hexadecimal? For example, what method converts the integer 65 into the string "41"?

b) What two Integer methods would you use to convert a string expressed in base 5 into the equivalent integer? For example, how would you convert the string "230" into the integer value 65? Show the code you would use to accomplish this task.

c) What Double method can you use to detect whether a floating-point number has the special value Not a Number (NaN)?

d) What is the value of the following expression, and why?

new Integer(1).equals(new Long(1))

e) What is the idea of responsibility tied to info hiding in object-oriented design?

f) How does one properly identify the class and objects that are relevant to a particular application?

g) Distinguish between Abstract Class and Interface.

(7x4)

2.

a) What Is a Message? Explain the message passing in a system with the help of a sequence diagram or an event trace diagram.

b) What is a class inheritance hierarchy? Explain benefits of inheritance.

c) Explain distinction between Aggregate and Inheritance relationship.

d) Explain how Java 3D hides rendering-pipeline details from the developer.

(4+4+5+5)

3.

a) Explain the advantages of OOP (Object Oriented Programming) versus other programming techniques.

b) Discuss how the encapsulation gives rise to modularity.

c) How a developer can hide data in java programs, explain the use of encapsulation accordingly.

d) Java 3D components are heavyweight. Discuss.

(5+5+4+4)

4.

a) How polymorphism is linked to inheritance. Is it necessary to have inheritance to go for polymorphism? If yes how?

b) Compare composition and generalization-specialization.

(9+9)

5.

a) How delegation is performed making use of part-of relationship. How do we implement the delegation in Java programming?

b)   Write a program that shows the basic steps needed to display 3D objects.

- Create a virtual universe to contain your scene.
- Create a data structure to contain a group of objects.
- Add an object to the group
- Position the viewer so that they are looking at the object
- Add the group of objects to the universe

(9+9)

6.

a)   Can a program run on any platform if it is written in the JAVA programming language?

b)   An applet will run in almost any browser, why?

c)   What does the Applet class provide?

d)   Which method will a web browser call first on a new applet? Explain the method.

e)   What is the advantage of using import statements? Explain?

f)   What a constructor in Java used for.

g)   What the BorderLayout class provides static fields for.

(3+2+3+3+3+2+2)

7.

a) Write a program that prints the web address of DOEACC (www.doeacc.org.in).

b) Write a program that prints the web address 204.219.27.27.

c) Write a program to find the IP address of the local machine.

(6+6+6)