Student Exam No._____

# GANPAT UNIVERSITY

**B. Tech. Semester: III Computer Engineering/Information Technology**

**CBCS Regular Examination November-December 2014**

**2CE304/2IT304: Object Oriented Programming**

**Time: 3 Hours** **Total Marks: 70**

**Instruction:** 1. Attempt all questions.
2. Figures to the right indicate full marks.
3. Each section should be written in a separate answer book.

## SECTION - I

**Que.1** [A] Define following terms. [4]
1) Object 2) Class 3) Data Abstraction 4) Encapsulation

[B] 'Java is compiled, interpreted and portable language': Justify the statement. [4]

[C] Explain explicit and implicit type casting with example. [4]

**OR**

**Que.1** [A] Define Inheritance. What are the advantages of inheritance? Explain different types of Inheritance in brief. [4]

[B] Explain Java program structure. List out the key features of Java. [4]

[C] What is enhanced for loop? Write a program to find maximum from array using enhanced for loop. [4]

**Que.2** [A] Discuss static members of class with example. How are they different from instance members of class? [5]

[B] What is constructor? Explain the role, characteristics and types of constructor with example. What is constructor overloading? [6]

**OR**

**Que.2** [A] Explain dynamic method dispatch with example. [5]

[B] Discuss the use of final and this keywords. When do we declare a class as abstract? [6]

**Que. 3** [A] Define command-line argument. Write a program to print a table of the powers of 2 that are less than or equal to $2^N$ using command-line argument. [3]

[B] Write a java program to create a class **Cube** which has an integer attribute **length** (representing the length of its side). The class should be capable of calculating its surface area using **getSurfaceArea()** method and volume using **getVoulme()** method. Also it has method **set_info()** to set instance variables. Create an object of Cube to test member function. [4]
Cube Surface Area = $6 * l^2$ , Cube Volume = $l^3$ (l=length)

[C] What is method overriding? Write a program to calculate the area of triangle and rectangle using method overriding by creating a base class **Figure**. **Figure** class has two instance variables **dim1**, **dim2** and one method **area()**. Derive **Triangle** and **Rectangle** class by extending Figure class. Both Triangle and Rectangle class override the **area()** to calculate the area of triangle and rectangle. Add required constructor in every class to initialize class data member. [5]

## SECTION – II

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|---|---|---|---|
| Que.4 | [A] | Write a program to sort an array of integers. | [4] |
| | [B] | What is package? Give the advantages of packages. List out Java API Packages. | [4] |
| | [C] | Develop an applet that receives two numeric values as parameters passed from html file and then displays the sum of them on the applet. Write an html page that contains **<param>** tag. | [4] |

**OR**

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|---|---|---|---|
| Que.4 | [A] | Differentiate between String and StringBuffer class. Write a Java program to create a String object **s1**. Initialize **s1** with "**welcome to uvpce**". Find the length, first character and last character of string using the appropriate methods of String class. | [4] |
| | [B] | Briefly explain any four Access Control /Visibility Control modifiers in Java. | [4] |
| | [C] | How do applets differ from application programs? Write steps involved in developing applet. | [4] |
| Que.5 | [A] | Write a java program for generating two threads, one for generating even numbers and one for generating odd numbers. | [5] |
| | [B] | Explain exception handling mechanism with example. What is a finally block? | [6] |

**OR**

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|---|---|---|---|
| Que.5 | [A] | Create an exception class named **AgeOutOfRangeException** extended from the class **Exception** that is thrown when entered age is greater than 25.Write a program that uses this exception. | [5] |
| | [B] | Explain lifecycle of thread. | [6] |
| Que.6 | [A] | Write java code that illustrates following interface inheritance.<br>Create an interface **P**. Interface **P** is extended by interfaces **P1** and **P2**.Create an interface **P12** which is inherited from both **P1** and **P2**. Create a class **S**. Create a class **Q** which implements **P12** at the same time extends the class **S**. | [2] |
| | [B] | Differentiate between compile time and run time error. Define checked and unchecked exception. | [4] |
| | [C] | What is an Interface? What are the uses of Interface? What are similarities and differences between interface and abstract class? Can interface extend any class? | [6] |

END OF PAPER