Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 150704 Date:05/12/2015

Subject Name: Object Oriented Programming with Java

Time: 10:30am to 1:00pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** (i) Explain short circuited operators. **07**
(ii) Explain function overloading with an example.

(b) (i) Explain final and finally. **07**
(ii) Explain array implementation in Java.

Q.2 **(a)** Declare a class called Coordinate to have 3 dimensional Cartesian coordinates. Define following methods : **07**

- Constructor(s)
- add_coordinates to add two Coordinate objects and to produce resultant object. Generate and handle exception if all three coordinates of the resultant Coordinate object are zero.

Define method main to show use of above methods.

(b) (i) Explain with the help of example(s), use of interface. **07**
(ii) Explain packages.

OR

(b) (i) Explain keywords - super and throws. **07**
(ii) Method main is a public static method. Justify.

Q.3 **(a)** Declare a class called author having author_name as private data member. Extend author class to have two sub classes called book_publication & paper_publication. Each of these classes have private member called title. Show usage of dynamic method dispatch (dynamic polymorphism) to display book or paper publications of a given author. Use command line arguments for inputting data. **07**

(b) (i) Explain instanceof operator. **07**
(ii) There is no destructor in Java. Justify.

OR

Q.3 **(a)** (i) Java program is to be compiled first and then to be interpreted for execution. True or false? Justify your answer. **07**
(ii) Explain event handling in Java.

(b) (i) Explain keywords this and protected. **07**
(ii) Explain keywords abstract and volatile.

Q.4 **(a)** (i) Explain use of adapter classes. **07**
(ii) Explain utility class ArrayList.

(b) (i) Explain life cycle of an applet. **07**
(ii) Explain Flow layout.

OR

Q.4 **(a)** Write a complete program to have 3 Buttons in a frame having exit capabilities. Buttons are to be added in the frame as per the layout of your choice. Count and display number of times each Button being clicked. **07**

(b) Write a complete program to implement a singly linked list with nodes storing integer information using suitable utility class. **07**

Q.5 **(a)** Write a multithreaded program to print all odd positive numbers in ascending order up to n, where n is a positive integer number given as a command line argument. Instantiate requited number of threads, where each thread except the last, examines next 50 numbers and the last thread examines remaining numbers up to n. **07**

(b) (i) Compare methods wait and sleep. **07**
(ii) Explain Runnable and notifyAll.

OR

Q.5 **(a)** Write a multi-threaded program to have two producer threads, each writes (push) total 7 integer items to the same (common) stack. The producers enter into sleep state for 500 ms after writing every item. There is one consumer thread that reads (pop) from the same stack and enters into sleep state then-after for 600 ms. Assume stack size as 10. Incorporate all required conditions so that all valid items are popped only once and there is no stack overflow & underflow. **07**

(b) (i) Explain method join with the help of an example. **07**
(ii) Explain two usage of keyword synchronized.

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