Time : 3 Hours   日   Max. Marks : 80

Object oriented Prog. methodology.

Note: Q. 1 is compulsory.

Attempt any **THREE** questions from **Q. 2 to Q. 6**

Q. 1	a	Explain Java Virtual Machine.	[5]
	b	Write a program to display factorial of given number. Take input from command line arguments.	[5]
	c	Explain System.arraycopy() method with example.	[5]
	d	Explain Thread life cycle.	[5]
Q. 2	a	Explain different ways to create Thread in JAVA with example.	[10]
	b	Differentiate between method overloading and overriding. Write a program to override **area()** method of **Shape** class into its subclasses **Rectangle** and **Square**. **Shape** is an abstract class.	[10]

Q. 3   a   Explain different types of relationships among the entities.   [10]

Define the relationships among the objects of given sentences:

    1) Manager is an Employee.

    2) Teacher teaches OOPM subject to students.

    3) Merry owns a car.

    4) Engine is a part of car.

   b   Explain the steps to create package in JAVA to add class and interface with   [10]
example.

Q. 4	a	Explain bitwise operators in JAVA.	[4]
	b	Explain use of **final** keyword when it is prefix with variable, method and class.	[4]
	c	Explain Cohesion and Coupling.	[4]
	d	Write an applet program to display	[4]
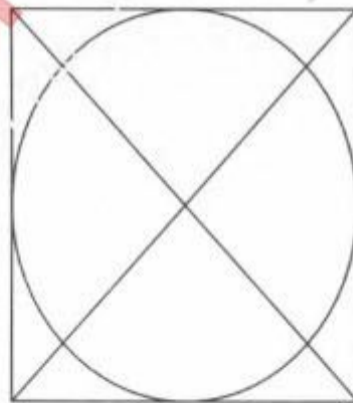
   e   What is abstract class? Explain with example.   [4]

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Q. 5 a Explain exception handling mechanism with the help of **try**, **catch**, **throw**, **throws** [7]
and **finally**.

b Department of Computer Engineering wants to maintain record of books. If any [8]
new book is purchased then it is added to the list. Also if any book is damaged or
misplaced it can be deleted from the list. Write a program to perform above
operations and display list of books available in the department.

c Differentiate between String and StringBuffer class. [5]

Q. 6 a Explain inheritance and its types in JAVA. [5]

b Explain wrapper class. [5]

c Write a program to display sum of main diagonal elements of a matrix. [5]

d Explain Applet lifecycle methods. [5]

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