INDIAN INSTITUITE OF INFORMATION TECHNOLOGY KOTA

B. Tech (4th Semester) ECE Department MTE Examination

CST202 Object Oriented System Design Time: 1 Hr. 30 Min Marks: 30

I. Choose the most appropriate option [5].

1. What is the difference between a class and an object in Java?
   a) A class is a blueprint for creating objects, while an object is an instance of a class.
   b) A class is a single entity, while an object is a collection of entities.
   c) A class contains data and methods, while an object only contains data.
   d) A class cannot be instantiated, while an object can be created and used.
2. Which one of the following is not a necessary condition for java constructors?
   a) Its name must be same as that of class b) It must not have any return type
   c) It must contain a definition body d) It can contains arguments e) None of these
3. What is the purpose of the "this" keyword in Java?
   a) To refer to the superclass b) To create multiple instances of a class
   c) To hide data and methods within a class d) To refer to the current object
4. Find the output of the following program

```
public class MTE {
        public static void main(String[] args) {
                short x = 10;
                x = x * 50;
                System.out.println(x); }
        }
```

A) 500 B) 10 C) compilation error D) exceptions E) None

5. Which among the following best defines abstraction
   a) Hiding the implementation b) Showing the important data c) Hiding the important data
   d) Hiding the implementation and showing only the features
6. Which access modifier usually used for data members of a class to ensure highest security of data?
   a) Protected b) Private c) Public d) Package-private
7. Which type of members can't be accessed in sub classes of a super class?
   a) All can be accessed b) Protected c) Private d) Public e) package private
8. Which of the following is not an OOP's concept?
   a) Inheritance b) abstraction c) Polymorphism d) Encapsulation e) None of these
9. The purpose of the final keyword in Java is
   A) To prevent the inheritance of a class B) To prevent overriding of a method
   C) To prevent modification of a variable's value D) All of the above
10. How many objects will be created in the following:

```
String P = new String("IIIT KOTA MTE");
String Q = new String("IIIT KOTA MTE");
String R = "IIIT KOTA MTE";
String S = "IIIT KOTA MTE";
```

A) 3 B) 2 C) 4 D) 1 E) None

II. Answer True /False. [2.5]

i) Class encapsulates both data and data manipulation methods.
ii) Abstraction feature can be implemented using encapsulation.
iii) JRE provides by default a parameterized constructor when no constructor is defined by coder.
iv) Java supports the multiple inheritances.
v) Objects can't be passed by reference.

III. Fill in the blanks [2.5]

a) Access modifier in which a constructor should be defined, so that object of the class can be created in any function is - - - .

b) The ability of an object to take many forms in java is known as - - - - - - - - - .

c) The type of elements of array of objects is - - - - - - - - - .

d) A package is a collection of both - - - - - - - - - and - - - - - - - - - .

e) The main four principles on which OOPs concepts in Java build are - - - - - - - - - .

IV. Answer the following: [6+6+8]

1. a) How are classes organized in an object oriented environment? Explain with example?

   b) How information (i.e. data) hiding achieved in Java using object oriented concept?

   c) What are the role and importance of constructor in OOPs?

2. a) Explain with benefits of Method Overloading and Method Overriding?

   b) Explain differences between

      i) instance variable and class variable ii) Final and static keywords

3. Write a program using OOP concepts to create a Class **Canteen** having attributes like **name** of canteen, **menu_Items** and its **price** for keeping items and its price and write method **Add_Item** to add items into menu, **Print** to display details of menu and **Compute_Cost** for calculating total cost of all items in the menu. Use appropriate access modifiers and make your class immutable.

   and now perform the following task:

i)Add items into the menu ii) Display details of canteen/menu iii) Print total cost of all menu items.