Program Definition	Program No.
Write a JAVA program which performs the following tasks A Create a package named MyPackage which consists of following classes: 1 A class names Person to store information like first name, middle name, last name, address and aget. The class must contain appropriate get and set methods 2 create a class student and inherit person class. override toString() method.class stores information loke rollno,Division,dateofBirth etc. 3 create a class employee and inherit person class. override toString() method.class stores information loke empid,da,hra and net salary. Override toString() method. Scan all the data using scanner class. 4 Override toString() and CompareTo() methods in student class. 5 Create array list add 5 objects of student in array list and sort it by rollno. 6. Create array list add 5 objects of employee in array list and sort it by netsalary. 7.Add Exception handling code where ever it required	**1**
Write a JAVA program which performs the following tasks Create a package named MyPackage which consists of following classes: 1 A class Person to store information like first name, last name and age. The class must contain appropriate get, set and display () methods. Create proper constructor. 2 Now Inherit the class Employee from the class Person to store information like employee ID, designation and salary of the employee. The class must contain appropriate get, set and display () methods. Create proper constructor 3 Now Inherit the class Student from Person to store information like roll number, address and percentage of the student. The class must contain appropriate get, set and display () methods. Create proper constructor 4 Crete object of Student and Employee class in Test class. 5 Person class must not be instantiate and it contains display() method. 6. Add Exception handling code where ever it required	**2**
Create a package named MyPackage which consists of following classes: 1. Create a class “Rectangle” that would contain length and width as data members. 2. Define constructors [constructor overloading (default, parameterized and copy)] to initialize the data members. 3. Define the member functions to find area and to display the number of objects created. [Note: define initializer block, static initializer block and the static data member and member function. Also demonstrate the sequence of execution of initializer block and static initializer block] 4. Override toString() method in every class. 5. Add Exception handling code where ever it required	**3**

Create a package named MyPackage which consists of following classes: 1. Describe abstract class called Shape which has three subclasses. Triangle, Rectangle, and Circle. 2.Define one method area () in the abstract class and override this area () in these three subclasses to calculate for specific object i.e. area () of Triangle subclass should calculate area of triangle etc. Same for Rectangle and Circle. 3. Override toString() method for all classes. 4. access the object of all class from the reference variable of shape class. 5. Add Exception handling code where ever it required	**4**
Create a package named MyPackage which consists of following classes: 1. Write a java program to implement an interface called Exam with a method Pass (int mark) that returns a boolean. 2. Write another interface called Classify with a method Division (int average) which returns a String. Write a class called Result which implements both Exam and Classify. The Pass method should return true if the mark is greater than or equal to 50 else false. 3. The Division method must return "First" when the parameter average is 60 or more, "Second" when average is 50 or more but below 60, "No division" when average is less than 50. 4. write code for constructor and get , set method. 5. override toString() method in the class. 6. Add Exception handling code where ever it required	**5**
Write the following program. 1. Create a class "Account" containing accountNo, and balance as data members. 2. Derive the Account class into two classes named "Savings" and "Current". The "Savings" class should contain a data member named interestRate, and the "Current" class should contain a data member called overdraftLimit. 3. Create appropriate member functions for all the classes to enable functionalities to check balance, deposit, and withdraw amount in Savings and Current account. [Ensure that the Account class cannot be instantiated.] Scan the data from user side. 4. override toString() method in class. 5. Add Exception handling code where ever it required	**6**
Write a JAVA program which performs the following tasks Create a package named "geometry" which consists of following classes. An abstract class named "figure" which has final variable PI. The class should also contain abstract method called area () and perimeter (). Another class called "Rectangle" which is derived from "figure" class. It has instance variable width and length. The class should also contain parameterized constructor named "Rectangle". It should also override method area () [(width*length)].	**7**

Another class called “Circle” which is derived from “figure” class. Also, it has extra instance variable radius. The class should also contain parameterized constructor named Circle. It should also override method area () [PI* radius*radius] and perimeter () [2*PI*radius]. Create a class Test (class which has main ()) to perform required operation by getting values for “Rectangle” and “Circle” objects based on your input choice. Create four references of “figure” class which refer “Rectangle” and “Circle” objects based on input choice (“C” for circle/ “R” for “Rectangle”). Call area () for all four objects and perimeter () only for “circle” objects and also display area and perimeter of the objects. Create a package “shape” in which “Circle” and “Test” are declared. There are two packages. 1st package “geometry” contains “figure” and “Circle”, 2nd package “shape” contains “Rectangle” and “Test”. Add Exception handling code where ever it required	
Create a package named “MCA” which consists of following classes: A class named “student” which has instance variables student_id, student_name, address, array of marks of size 3 and grade. The class must contain appropriate constructor. This class has method calculate_grade() which calculates grade. (After adding array of marks and project marks, if student will get above 90%, she/he scores A+, above 80%, he scores A, above 70%, he scores B+, above 60%, he scores B, above 50%, he scores C, else C). Create a class “Subject” inherit it from student class. the class has instance variables like subject_id,Subject_name,elective(boolean). Write appropriate constructors and get() set() methods. Scan the data from user side. override toString() method in the class. Add Exception handling code where ever it required	**8**
Create a package named “Mypackage” which consists of following classes: A class named “Supplier” which has instance variables sup_id, sup_name, address, array of product_name of size 3 and array of price_of_product of size 3 and total_price. The class must contain appropriate constructor. This class has method calculate_total_price() which calculates total price (total_price) of three Products. Scan the data from user side. override toString() method in the class. Add Exception handling code where ever it required	**9**
Write a JAVA program which performs the following tasks i) Declare a class “Amazon_item” which has instance variable item_id (int), product_type(Textile/shoe/cosmetics), item_name (String), Methods: item_display_price (int), item_net_price (int).	**10**

This class has appropriate constructors, abstract methods calculate_net_price() and display_price(). ii) Declare 2nd class "cloth_item" derived from "Amazon_item" which has extra instance variable texture_type (Cotton/silk/synthetic). It has overridden methods with same prototype and parameterized constructors. calculate_net_price() method calculates final discounted selling price, that much amount, customer has to pay. (if price value is more than 5000/-, discount will be 15% from item_display_price. if price value is more than 4000/-, discount will be 10% from item_display_price, if price value is more than 3000/-, discount will be 5% from item_display_price, else No discount). display() method displays all data of a "cloth_item" objects. iii) Declare 3rd "main_application" class which declares two "Amazon_item" object references which refer to "cloth_item" objects. Call appropriate constructors for two cloth_item objects. Accept item_id, product_type, item_name and item_display_price from keyboard for 2 objects. Calculate item_net_price for these two "cloth_item" objects and display their data including their net_price (final discounted selling price). Add Exception handling code where ever it required	
Write a JAVA program which performs the following tasks. i) Declare a class "Bank**_account**" which has variables Account_id,mobile_number, account_holder_name, account_type, account_balance.Credit_limit Methods are as follows: Overloaded constructors and update_account() Create an application which takes Account_id as an input. Account detail information are retrieved from the array and displayed into display screen. Declare an array of references of "BC_account" and then store the values of all "Bank_account" objects. Scan the data from user side. override toString() method in the class. Add Exception handling code where ever it required	**11**

. Write a JAVA program which performs the following tasks. i) A class named "Bill" which has instance variable like Bill_id, array of item_price, total_number_of_items, total_amount. "Bill" class has appropriate constructors and calculate_total_amount(). Calculate_total_amount() is computed based on sum of item_price. ii) Create an application which allows entering all information related with "Bill" except total_amount. iii) Thow exception for –ve total_amount. Scan the data from user side. Add Exception handling code where ever it required	**12**
. Write a JAVA program which performs the following tasks i) Create a package named "GTU" which consists of following classes: ii) A class named "**Supplier**" which has instance variables sup_id, sup_name, address , array of product_name of size 3 and array of price_of_product of size 3 and total_price. The class must contain appropriate constructor. This class has method calculate_total_price() which calculates total price (total_price) of three Products. iii) Class named "**book_supplier**" is derived from "Supplier" . It has instance variable array of "discount" of int type. Override calculate_total_price() after calculating discounted value from original price. iv) Create an application for creating objects of "**Supplier**" and call calculate_total_price() for displaying total_price. Scan the data from user side. Add Exception handling code where ever it required	**13**
Write a JAVA program to perform the following. i) Declare an abstract class "**Person**". Instance variables are as below: name – String salary – double Methods are as follows: Overloaded constructors Abstract method: hike_Salary(double percentage) Display_data() ii) Declare class "**Employee**" which is inherited from "Person". Override hike_Salary(double percentage): method in this class such that the employee's salary is incremented by percentage which is passed as parameter. Throw exception if percentage which is passed, is negative. iii) Declare class "**Manager**" which is inherited from "Employee".	**14**

Override hike_Salary(double percentage) method such that manager's salary is incremented by the percentage passed as parameter and additional 5000 is added as bonus. iv) Declare "Application_per" class. Within this class, declare Person array. Create objects of "Employee", "Manager" and store the references of objects into above mentioned array. Call hike_Salary(double percentage) method and display_data() for all objects. Add Exception handling code where ever it required	