5/H–73 (vi) (c) (PR) (Syllabus–2015)

2022

(November)

COMPUTER SCIENCE

(Honours)

(CS–502 CP)

(Object-oriented Programming through Java)

(Practical)

Marks : 37

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **one** question from Section—A and **two** questions from Section—B

SECTION—A

1. Create a Class Account with the following data members, methods and constructors :

   (a) Data Members : Private data members for *Account Number, Account Holder's Name* and *Balance*

   (b) Accessor and Modifier methods for Account Number, Account Holder's Name and Balance

   (c) A no-argument constructor for assigning default values (of your choice) to the data members

(d) A three-argument constructor for assigning values of Account Number, Account Holder's Name and Balance

(e) A method named withdraw that withdraws a specified amount from the account

(f) A method named *deposit* that deposits a specified amount to the account

Create two Subclasses of Account as *SavingAccount* and CurrentAccount. *Saving-Account* has additional data member *minimum balance* while *CurrentAccount* has data member *overdraft amount*. Both data members are of numeric type. Create constructors for each Subclass. Finally, test these classes using a Tester class. 13

2. Create a class rectangle with the following data members, methods and constructors :

(a) Data Members : Two data members—length and width of type double.

(b) Create a no-argument constructor that assigns default values of 1 to length and width. Create a parameterized constructor that takes two double arguments and assigns them to the data members.

(c) Write methods that calculate the perimeter and the area of the rectangle.

(d) Create accessor and modifier methods for both length and width. The modifier method should verify that length and width are each floating point numbers larger than 0·0 and less than 20·0.

(e) Create a Boolean method is square which determines if the rectangle is a square i.e., if both length and width are the same.

(f) Override the toString method of the object class to return the details of the rectangle.

Test this Rectangle class using a Tester class. 13

SECTION—B

3. Write a program to enter the names of countries and their capitals and write these to a file. The program should then randomly select a country and ask the user to input the appropriate capital city. The program should check if the city name entered by the user is correct or not by looking up from the file and provide the feedback to the user. 12

4. Create a table named *Movie* with the following fields—(*MovieID, Title, Release Date, Genre, Actors, Director*) in any RDBMS available to you. Fill this table with some dummy data of your choice. Write a Java program to take input for a Genre (Say,

Thriller, Drama, Horror, etc.) and display the details of all movies of the that genre from the *Movies* table. The displayed data should be sorted on descending order of Release date. 12

5. Write a Servlet program to perform the following tasks : 12

- Create an initial web page that has a textbox labelled "Enter a sentence", for entering a string. There should be three radio buttons labelled "Upper Case", "Lower Case" and "Sentence Case". Finally, there should be a button labelled "Submit". The user enters a sentence in the textbox, selects one of the radio button and clicks on SUBMIT.
- On submission, the Servlet program should convert the sentence entered by the user into the case as selected by the user (i.e., Upper Case, Lower Case or Sentence case) from the radio buttons and displayed.

Distribution of Marks for Practical :

(i)	Syntax	10%
(ii)	Input/Output Screens	10%
(iii)	Logic and efficiency	50%
(iv)	Error trapping	10%
(v)	Completion and result	20%

★★★