(Autonomous)

MODEL QUESTION PAPER

B.Tech III Semester End Examinations (Regular), November – 2017
Regulation: IARE–R16
OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Computer Science and Engineering)

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT I

1. (a) Explain any five object oriented features supported by java with examples. **[7M]**

   (b) Write a java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$.. Read in a, b, c and use the quadratic formula. **[7M]**

2. (a) What is method overloading? can you define two methods that have same name but different parameter types? Can you define two methods in class that have identical method names and parameter profile with different return values types or different modifier? **[7M]**

   (b) Write a java program that collects input as a decimal number of integer type and converts it into String of equivalent hexadecimal number. **[7M]**

UNIT II

3. (a) Describe how java supports runtime polymorphism with an example by considering get Interest Rate() of RBI being overridden with get Interest Rate() of various banks like sbi, axis, icici, etc which extend RBI. **[7M]**

   (b) Write a java program to create a package named called mypack, containing a class name as Right_Triangle having a static method to check whether three given sides of a triangle forms a right-angled triangle and returns that information. Import this package in another class. **[7M]**

4. (a) "Interface variables are static and final by default in Java" - Support this statement with proper explanation. Compare and contrast an Interface and abstract class? **[7M]**

   (b) Write a Java Program to create an abstract class named Shape that contains two integers and an empty method named print Area().provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape. **[7M]**

UNIT III

5. (a) What is an Exception? List out the keywords for exception handing and write steps to develop user defined exception. **[7M]**

    (b) Write a program that creates a user interface to perform integer division. The user enters two numbers through command line arguments as Num1 and Num2, perform division and returns the remainder. If Num1 and Num2 are not integers, then Number Format Exception has to be generated . If Num2 is Zero, Arithmetic Exception has to be generated. **[7M]**

6. (a) What is multithreading? Explain how multithreading in single processor system is different from multi-threading in multiprocessor system. **[7M]**

    (b) Write a java program that creates three threads. First thread displays Schildt in every two seconds, the second thread displays Bala Guru Swamy in every three seconds, and the third thread displays Chris Bates every four seconds **[7M]**

UNIT IV

7. (a) Explain the purpose of streams. List out the various methods of reader and writer abstract classes. **[7M]**

    (b) Write a Java program that reads a .txt file from user and display number of words and lines in the file.
    [7M]

8. (a) Explain the necessity of drivers and describe the steps involved in establishment of a JDBC connection to retrieve the data from database. **[7M]**

    (b) Write a java Program that inserts book details like bookid, author, pages, price, in to library database, update the database by adding publisher column and display the result from library database using JDBC connectivity. **[7]**

UNIT V

9. (a) Explain why swings are better than AWT and list the methods of JFrame and constructors of JDialog swing components. **[7M]**

    (b) Write a program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the + , - ,*,% operations. Add a text field to display the result. Handle any possible exception like divided by zero. **[7M]**

10. (a) Explain the life cycle of an applet with neat diagram and state the reason for destroy() method invocation.
    [7M]

    (b) Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with "Stop" or "Ready" or "Go" should appear above the buttons in selected color. Initially there is no message shown.
    [7M]

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COURSE OBJECTIVES:

The course should enable the students to:

1	Understand the basic object oriented programming concepts and apply them in problem solving.
2	Illustrate inheritance concepts for reusing the program.
3	Demonstrate on the multi-tasking is performed by using multiple threads.
4	Develop data-centric applications using JDBC.
5	Understand the basics of java console and GUI based programming.

COURSE LEARNING OUTCOMES:

Students, who complete the course, will have demonstrated the ability to do the following:

CACS003.01	Use object oriented programming concepts to solve real world problems.
CACS003.02	Explain the concept of class and objects with access control to represent real world entities.
CACS003.03	Demonstrate the behavior of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.
CACS003.04	Use overloading methodology on methods and constructors to develop application programs.
CACS003.05	Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords
CACS003.06	Describe the concept of interface and abstract classes to define generic classes.
CACS003.07	Use dynamic and static polymorphism to process objects depending on their class.
CACS003.08	Illustrate different techniques on creating and accessing packages (fully qualified name and import statements).
CACS003.09	Understand the impact of exception handling to avoid abnormal termination of program using checked and unchecked exceptions.
CACS003.10	Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally).
CACS003.11	Use multithreading concepts to develop inter process communication.
CACS003.12	Understand and implement concepts on file streams and operations in java programming for a given application programs.
CACS003.13	Describe the backend connectivity process in java program by using JDBC drivers.
CACS003.14	Develop java application to interact with database by using relevant software component (JDBC Driver).
CACS003.15	Understand the process of graphical user interface design and implementation using AWT or swings.
CACS003.16	Use different layouts (Flow Layout, Boarder Layout, Grid Layout, Card Layout) to position the controls for developing graphical user interface.
CACS003.17	Build the internet-based dynamic applications using the concept of applets.
CACS003.18	Develop applets that interact abundantly with client environment and deploy on the server.
CACS003.19	Knowledge on usage of graphical IDE for design and implementation of real time applications in java.
CACS003.20	Posses the knowledge and skills for employability and to succeed in national and international level competitive exams.

Mapping of Semester End Examinations to Course Learning Outcomes:

SEE Question No.			Course Learning Outcomes	Blooms Taxonomy Level
1	a	CACS003.01	Use Object Oriented Programming concepts to solve real world problems.	Understand
	b	CACS003.02	Explain the concept of class and objects with access control to represent real world entities	Understand .
2	a	CACS003.04	Use overloading concept on method and constructor for application programs.	Understand
	b	CACS003.03	Demonstrate the behavior of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.	Understand
3	a	CACS003.07	Use the concept of dynamic and static polymorphism to process objects depending on their class.	Remember
	b	CACS003.08	Illustrate different techniques on creating and accessing packages (fully qualified name and import statements).	Understand
4	a	CACS003.06	Describe the concept of interface and abstract classest to define generic	Understand
	b	CACS003.06	Describe the concept of interface and abstract classes to define generic	understand
5	a	CACS003.09	Understand the impact of exception handling to avoid abnormal termination of program using checked and unchecked exceptions.	Understand
	b	CACS003.10	Demonstrate the user defined exceptions by exception handling keywords(try, catch, throw, throws and finally). solve an appropriate problem.	Understand
6	a	CACS003.11	Use multithreading concepts to develop inter process communication.	Understand
	b	CACS003.11	Use multithreading concepts to develop inter process communication.	Understand
7	a	CACS003.12	Understand and implement concepts on file streams and operations in java programming for a given application programs.	Understand
	b	CACS003.12	Understand and implement concepts on file streams and operations in java programming for a given application programs.	Understand
8	a	CACS003.13	Describe the backend connectivity process in java program by JDBC drivers.	Remember
	b	CACS003.14	Develop java application to interact with database by using relevant software component (JDBC Driver).	Understand
9	a	CACS003.15	Understand the process of graphical user interface design and implementation using AWT or swings.	Remember
	b	CACS003.16	Use different layouts (Flow Layout, Boarder Layout, Grid Layout, and Card Layout) to position the controls for developing graphical graphical user interface.	Understand
10	a	CACS003.17	Build the internet-based dynamic applications using the concept of applets.	Understand
	b	CACS003.18	Develop applets that interact abundantly with client environment and deploy on the server.	Remember