Ref No:

Sri Krishna Institute of Technology,
Bangalore

COURSE PLAN

Academic Year 2019-2020

Program:	BE – Computer Sceience &Engineering
Semester :	4
Course Code:	18CS45
Course Title:	OBJECT ORIENTED CONCEPTS
Credit / L-T-P:	3/0-3-0
Total Contact Hours:	40
Course Plan Author:	NETHRA H L

Academic Evaluation and Monitoring Cell

Sri Krishna Institute of Technology
#29,Chimney hills,Hesaraghata Main road, Chikkabanavara Post
Bangalore – 560090, Karnataka, INDIA
Phone / Fax :08023721477/28392221/23721315
Web: www.skit.org.in , e-mail: skitprinci@gmail.com

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A. COURSE INFORMATION

1. Course Overview

Degree:	B.E	Program:	CS
Semester:	IV Sem 'A &'B'	Academic Year:	2019-20
Course Title:	OBJECT ORIENTED CONCEPTS	Course Code:	18CS45
Credit / L-T-P:	3/0-3-0	SEE Duration:	180 Minutes
Total Contact Hours:	40	SEE Marks:	60Marks
CIA Marks:	40	Assignment	1 / Module
Course Plan Author:	NETHRA H L	Sign ..	
Checked By:		Sign ..	
CO Targets	CIA Target :80 %	SEE Target:	50.00%

Note: Define CIA and SEE % targets based on previous performance.

2. Course Content

Content / Syllabus of the course as prescribed by University or designed by institute.

Module	Content	Teaching Hours	Blooms Learning Levels
1	A Review of structures, Procedure–Oriented Programming system, Object Oriented Programming System, Comparison of Object Oriented Language with C, Console I/O, variables and reference variables, Function Prototyping, Function Overloading. Introduction, member functions and data,objects and functions, objects and arrays, Namespaces, Nested classes, Constructors, Destructors.	8	L2
2	Objects and arrays, Namespaces, Nested classes, Constructors, Destructors. Java's magic: the Byte code; Java Development Kit (JDK); the Java Buzzwords, Object-oriented programming; Simple Java programs. Data types, variables and arrays, Operators, Control Statements.	8	L3
3	Classes: Classes fundamentals; Declaring objects; Constructors, this keyword, garbage collection. inheritance basics, using super, creating multi level hierarchy, method overriding. Exception handling in Java. Packages,Access Protection,	8	L3
4	Packages, Access Protection,Importing Packages.Interfaces. What are threads? How to make the classes threadable Extending threads; Implementing runnable; Synchronization; Changing state of the thread; Bounded buffer problems, Producer consumer problems.	8	L4
5	Two event handling mechanisms; The delegation event model; Event classes; Sources of events; Event listener interfaces; Using the delegation event model; Adapter classes; Inner classes. The origins of Swing; Two key Swing features; Components and Containers; The Swing Packages; A simple Swing Application; Create a Swing Applet; Jlabel and ImageIcon; JTextField;The Swing Buttons; JTabbedpane;	8	L6

	JScrollPane; JList; JComboBox; JTable. JTabbedpane; JScrollPane; JList; JComboBox; JTable.		
-	**Total**		

3. Course Material

Books & other material as recommended by university (A, B) and additional resources used by course teacher (C).

1. Understanding: Concept simulation / video ; one per concept ; to understand the concepts ; 15 – 30 minutes
2. Design: Simulation and design tools used – software tools used ; Free / open source
3. Research: Recent developments on the concepts – publications in journals; conferences etc.

Modules	Details	Chapters in book	Availability
A	**Text books (Title, Authors, Edition, Publisher, Year.)**	**-**	**-**
1,2	Sourav Sahay, Object Oriented Programming with C++ , 2 nd Ed, Oxford University Press,2006 (Chapters 1, 2, 4)	1, 2, 4	Available
2,3,4,5	Herbert Schildt, Java The Complete Reference, 7th Edition, Tata McGraw Hill, 2007. (Chapters 1, 2, 3, 4, 5, 6, 8, 9,10, 11, 21, 22, 29, 30)	1, 2, 3, 4, 5, 6, 8, 9,10, 11, 21, 22, 29, 30	Available
B	**Reference books (Title, Authors, Edition, Publisher, Year.)**	**-**	**-**
2,3	Mahesh Bhave and Sunil Patekar, "Programming with Java", First Edition, Pearson Education,2008, ISBN:9788131720806	2,3,4	Available
1	2. Herbert Schildt, The Complete Reference C++, 4th Edition, Tata McGraw Hill,2003.	1,2,3	Available
1	3. Stanley B.Lippmann, Josee Lajore, C++ Primer, 4th Edition, Pearson Education, 2005	1,2,3,4	Available
2,3,4	4. Rajkumar Buyya,S Thamarasi selvi, xingchen chu, Object oriented Programming with java, Tata McGraw Hill education private limited.	5,7,9,10	Available
2,3,4,5	5. Richard A Johnson, Introduction to Java Programming and OOAD, CENGAGE Learning.	3,4,5,6,7,	Available
3,4,5	6. E Balagurusamy, Programming with Java A primer, Tata McGraw Hill companies.	1-10	Available
C	**Concept Videos or Simulation for Understanding**	**-**	**-**
C1	• https://stackoverflow.com/ 10 Min		
C2	• https://github.com/ 30 Min		
C3	• http://vtuplanet.com/ 40 Min		
C4	• http://docs.oracle.com/javase/ 20 Min		
C5	• http://www.javaworld.com/ 30 MIN		
D	**Software Tools for Design**	**-**	**-**
	JDK (Java Development Kit)		
	Eclipse IDE		
	Net Beans		
	Intel T		
	J idea 13.1		
	Oracle J Developer		
	J Unit		
	APACHE ant		
	Jrat (Runtimve java Analysis Tool Kit		
	Apache MAVEN		
	Gradle		
E	**Recent Developments for Research**	**-**	**-**

1	https://www.researchgate.net/publication/235788474_Java_technology_in_the_design_and_implementation_of_web_applications		
2	http://www.telious.com/r-and-d.html		
3	https://researcher.watson.ibm.com/researcher/view_group.php?id=2687		
F	**Others (Web, Video, Simulation, Notes etc.)**	**-**	**-**
1	https://www.slideshare.net/intelligotech/java-tutorial-ppt-7189933		
2	https://cs.stanford.edu/people/eroberts/courses/cs106a/lectures/index.html		

4. Course Prerequisites

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.
Students must have learnt the following Courses / Topics with described Content . . .

Modules	Course Code	Course Name	Topic / Description	Sem	Remarks	Blooms Level
1	17PCD13	Programing in C &Data structures	Module 2 : Branching and Looping	1	Branching and looping concepts were taught earlier.	L3
2	17PCD13	Programing in C &Data structures	Module 3 : Functions arrays and strings.	3	Concept of Functions, Arrays and strings	L3
3	17PCD13	Programing in C &Data structures	Module 4 : Structures and File management.	3	Understanding and implementing the basics of structures.	L3

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.
Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Modules	Topic / Description	Area	Remarks	Blooms Level
1	Reflections	Higher Study	Gap A seminar on Reflections in java	L4 Analysis
2	Networking in Java	Higher Study	Gap A Seminar on Java Networking features	L3 Apply

B. OBE PARAMETERS

1. Course Outcomes

Expected learning outcomes of the course, which will be mapped to POs.

Modules	Course Code.#	Course Outcome **At the end of the course, student should be able to . . .**	Teach. Hours	Instr Method	Assessment Method	Blooms' Level
1	18CS45.1	**Understand and Applythe** object oriented concept and fundamentals of java programming	8	Lecture and PPT Demonstration	Assignment Unit Test, Q&A Slip Test	L2
2	18CS45.2	**Understand and** Apply Java programming language features and constructs to develop programs	8	Lecture, PPT and NPTEL videos	Assignment Unit Test, Q&A Slip Test	L3

3	18CS45.3	**Apply inheritance and exception handling techniques** to Develop Packages and Interfaces for java classes.	8	Lecture, PPT and NPTEL videos	Assignment Unit Test, Q&A Slip Test	L3
4	18CS45.4	Analyze multiple thread concepts and implement multi threaded programming in java to solve real world problems	8	Lecture, PPT and NPTEL videos	Assignment Unit Test, Q&A Slip Test	L4
5	18CS45.5	**Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using swings**	8	Lecture, PPT and NPTEL videos	Assignment Unit Test, Q&A Slip Test	L6
-	**-**	**Total**	**40**	**-**	**-**	**L2-L6**

2. Course Applications

Write 1 or 2 applications per CO.
Students should be able to employ / apply the course learnings to . . .

Modules	Application Area Compiled from Module Applications.	CO	Level
1	• Large problems can be reduced to smaller and more manageable problems. It is easy to partition the work in a project based on objects. • It is easy to model a real system as real objects are represented by programming objects in OOP.It is easy to analyze the user requirements.	CO1	L2
2	• Understanding java language features gives us the insight of what language offfers how we can use it in developing applications. • Apply Java programming language constructs to develop java applications.	CO2	L3
3	• we can reuse the existing class to derive a new class such that the redundant code is eliminated. • interfaces, helps us to guarantee a class will implement a set of predefined methods. • Exception error event helps us during the execution of a program and disrupts its normal flow. Exception gives information about the error including its type, the state of the program when the error occurred other custom information	CO3	L3
4	• Any program that uses GUI (graphical user interface) such as Java application written for windows, is event driven. Event describes the change in state of any object. For Example : Pressing a button, It is integral to the creation of applets and other types of GUI-based programs	CO4	L4
5	• Swings are used to Create Graphical User interface front end design for standalone applications in java. Helps us to create and manipulate various controls built in event handling mechanism is avialable in Swings.	CO5	L6

3. Articulation Matrix

CO – PO Mapping with mapping level for each CO-PO pair, with course average attainment.

-	-	Course Outcomes	Program Outcomes														-
Modules	CO.#	**At the end of the course student should be able to . . .**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	Level
1	CO1	**Understand and Apply the** object oriented concept and fundamentals of java programming	2	2	1		3				1	2	1	2		1		L2
2	CO2	**Understand and** Apply Java programming language features and constructs to develop	2	2	2		3				2	2	2	2		1		L3

		programs																
3	CO3	Apply inheritance and exception handling techniques to Develop Packages and Interfaces for java classes.	2	2	3		3				2	2	2	2		2	1	L3
4	CO4	Analyze multiple thread concepts and implement multi threaded programming in java to solve real world problems	2	2	3		3				2	2	2	2		2	1	L4
5	CO5	Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using swings	3	3	3		3				3	2	3	2		2	1	L6
-	**15EE662.**	Average																-
-	*PO, PSO*	*1.Engineering Knowledge; 2.Problem Analysis; 3.Design / Development of Solutions; 4.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and Society; 7.Environment and Sustainability; 8.Ethics; 9.Individual and Teamwork; 10.Communication; 11.Project Management and Finance; 12.Life-long Learning; S1.Software Engineering; S2.Data Base Management; S3.Web Design*																

4. Curricular Gap and Content

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs.

Modules	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1	Nested Inner Class, Command line arguments, , Overloading methods	Lecture on these topics / NPTEL Lecture video	May 1 Week	Dr XYZ, Inst	PO1,PO2,PO3, PO9,PO10, PO11,PO12
2					

C. COURSE ASSESSMENT

1. Course Coverage

Assessment of learning outcomes for Internal and end semester evaluation.

Modules	Title	Teach. Hours	No. of question in Exam						CO	Levels
			CIA-1	CIA-2	CIA-3	Asg	Extra Asg	SEE		
1	Introduction to Object Oriented Concepts: Class and Objects:	8	2			1	1	2	CO1	L2
2	Class and Objects: Introduction to Java:	8	2			1	1	2	CO2	L3
3	Classes, Inheritance, Exceptions, Packages and Interfaces: Inheritance: Exception handling:	8		2		1	1	2	CO3	L3
4	Multi Threaded Programming: Event Handling:	8		2		1	1	2	CO4	L4
5	The Applet Class:	8			4	1	1	2	CO5	L6

	Swings :									
-	**Total**	**50**	**4**	**4**	**4**	**5**	**5**	**10**	-	-

2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Modules	Evaluation	Weightage in Marks	CO	Levels
1, 2	CIA Exam – 1	30	CO1, CO2	L2,L3
3, 4	CIA Exam – 2	30	CO3, CO4	L3,L4
5	CIA Exam – 3	30	CO5	L6
1, 2	Assignment - 1	10	CO1, CO2	L2,L3
3, 4	Assignment - 2	10	CO3, CO4	L3,L4
5	Assignment - 3	10	CO5	L6
1, 2	Seminar - 1	00	-	-
3, 4	Seminar - 2	00	-	-
5	Seminar - 3	00	-	-
1, 2	Quiz - 1	00	-	-
3, 4	Quiz - 2	00	-	-
5	Quiz - 3	00	-	-
1 - 5	Other Activities – Mini Project	-	CO1-CO5	L6
	Final CIA Marks		**-**	**-**

D1. TEACHING PLAN - 1

Module - 1

Title:		Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
	At the end of the course student should be able to . . .		
1	**Understand and Apply the** object oriented concept and fundamentals of java programming	CO1	L2
b	***Course Schedule***	-	-
Class No	**Portion covered per hour**	-	-
1	**Introduction to Object Oriented Concepts:** A Review of structures, Procedure–Oriented Programming system,	**CO1**	L2
2	Object Oriented Programming System, Comparison of Object Oriented Language with C	**CO1**	L2
3	Console I/O, variables and reference variables, Function Prototyping,	**CO1**	L2
4	Function Overloading	**CO1**	L2
5	Class and Objects: Introduction, member functions and data,	**CO1**	L2
6	objects and functions,	**CO1**	L2
7	objects and arrays, Namespaces, Nested classes,	**CO1**	L2
8	Constructors, Destructors	**CO1**	L2
c	**Application Areas**		
-	Students should be able employ / apply the Module learnings to . . .		
1	• Large problems can be reduced to smaller and more manageable problems. It is easy to partition the work in a project based on objects.	CO1	L2

2	It is easy to model a real system as real objects are represented by programming objects in OOP.It is easy to analyze the user requirements	CO1	L2
d	**Review Questions**		
-	The attainment of the module learning assessed through following questions		
1	What are the difference between object oriented programming and procedure oriented programming	CO1	L2
2	what is function prototyping.	CO1	L2
3	Explain function overloading	CO1	L2
4	What are variables and reference variables	CO1	L2
5	Explain Constructors and destructors.	CO1	L2
6	What is an object and what is a class	CO1	L2
e	**Experiences**	-	-
1	Students expected more practicals and demonstations	CO1	L2
2			

Module – 2

Title:		Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	**At the end of the course student should be able to . . .**	-	**Level**
1	**Understand and** Apply Java programming language features and constructs to develop **programs**	CO2	L3
b	***Course Schedule***	-	-
Class No	**Portion covered per hour**	**-**	**-**
9	**Introduction to Java**:	CO2	L3
10	Java's magic: the Byte code;	CO2	L3
11	Java Development Kit (JDK);	CO2	L3
12	Java Buzzwords,	CO2	L3
13	Object-oriented programming;	CO2	L3
14	Simple Java programs.	CO2	L3
15	Data types, variables and arrays,	CO2	L3
16	Operators, Control Statements	CO2	L3
c	**Application Areas**	**-**	**-**
-	Students should be able employ / apply the Module learnings to . . .	-	-
1	Understanding java language features gives us the insight of what language offfers how we can use it in developing applications	CO2	L3
2	Apply Java programming language constructs to develop java applications.	CO2	L3
d	**Review Questions**	-	-
-	The attainment of the module learning assessed through following questions		
1	What is Byte Code. how it is helpful in platform independence.	CO2	L3

2	Explain the Java Buzz words in detail	CO2	L3
3	what are the important concepts in object oreinted programming	CO2	L3
4	**Explain** Data types in java	CO2	L3
5	**Explain** Control Statements injava	CO2	L3
6	Develop simple java programs using classes.	CO2	L3
e	**Experiences**	-	-
1	Students expected more practicals and demonstations	CO2	L3
2			

E1. CIA EXAM – 1

a. Model Question Paper - 1

Crs Code:	18CS45	Sem: IV	I	Marks:	30	Time:	90 minutes		
Course:	Object Oriented concepts								
-	**-**	**Note: Answer all questions, each carry equal marks. Module : 1, 2**					**Marks**	**CO**	**Level**
1	a	State the important features of object oriented programming. Compare object oriented programming with procedure oriented programming					5	CO1	L2
	b	Define function overloading. Write a C++ program to define three overloaded functions to swap two integers, swap two floats and swap two doubles					5	CO1	L2
	c	Explain the working of inline functions with example					5	CO1	L2
		OR							
2	a	Write a C++ recursive program to find the factorial of a given number					5	CO1	L2
	b	Explain the use of scope resolution operator					5	CO1	L2
	c	What is static data member?explain with example. What is the use of static members					5	CO1	L2
		PART B							
3	a	List &explain the characteristics features of java language					5	CO2	L3
	b	With example explain the working of >>and >>>.					5	CO2	L3
	c	Discuss three OOP principles					5	CO2	L3
		OR							
4	a	Write a note on object instantiation					5	CO2	L3
	b	Explain type casting in JAVA					5	CO2	L3
	c	With a program explain break, continue and return keyword in java					5	CO2	L3

b. Assignment -1

Model Assignment Questions							
Crs Code:	18CS45	Sem:	VII	Marks:	5	Time:	90 – 120 minutes
Course:	OBJECT ORIENTED CONCEPTS				Module : 1, 2		

Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.

SNo	USN	Assignment Description	Marks	CO	Level
1		Differentiate between i] POP and OOP, ii] Class and Structure and Explain how to create new data type by using structures.	5	CO1	L2
2		Elucidate about reference variables in C++ with appropriate example.Also write a program in C++ to swap two int values and display the values before and after swaping	5	CO1	L2
3		Explain function overloading with example to overload function area to	5	CO1	L2

		find area of circle, triangle and rectangle			
4		Explain basic concepts of OOC	5	CO1	L2
5		Explain function prototyping with example and what is constructor? List and explain different type of constructors with example.	5	CO1	L2
6		How do namespace help in preventing pollution of the global name space?	5	CO1	L3
7		What are friend functions? Explain in detail and what are static members of a class? Explain. Write a C++ program to count the number of objects created.	5	CO1	L3
8		Can you overload constructor and destructor? Justify with suitable program.	5	CO1	L3
9		Explain: i] Inline functions ii]Constant member functions iii]Mutable data members.	5	CO1	L3
10		What is scope resolution operator? Explain the use of scope resolution operator with example.	5	CO1	L2
11		Explain Java Buzzwords.	5	CO2	L2
12		Explain three basic OOP Principles of Java.	5	CO2	L2
13		Illustrate the concept of Type Conversion and Casting in java with appropriate program	5	CO2	L2
14		How arrays are defined in java? Explain with example(Both 1D and 2D Arrays)	5	CO2	L2
15		Explain Short Circuit logical Operators of java with Example.	5	CO2	L2
16		Explain Control Statements of Java With suitable example	5	CO2	L2
17		Explain compiling and execution of Java Program by taking a simple example	5	CO2	L2
18		Explain different variants of for looping statement with example.	5	CO2	L2
19		Write a Java program to read, add and display two complex numbers.	5	CO2	L2
20		Write a Java program to Multiply two matrices of size 3*3 using 2D arrays.	5	CO2	L2

D2. TEACHING PLAN - 2

Module – 3

Title:	Classes, Inheritance, Exceptions, Packages and Interfaces,	Appr Time:	12 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	At the end of the topic the student should be able to . . .	-	**Level**
1	**Apply inheritance and exception handling techniques** to Develop Packages and Interfaces for java classes.	CO3	L3
2			
b	***Course Schedule***		
Class No	**Portion covered per hour**	**-**	**-**
17	Classes: Classes fundamentals;	CO3	L3
18	Declaring objects; Constructors, this keyword, garbage collection.	CO3	L3
19	**Inheritance:** inheritance basics	CO3	L3
20	using super, creating multi level hierarchy	CO3	L3
21	method overriding.	CO3	L3
22	**Exception handling:** Exception handling in Java.	CO3	L3
23	Packages, Access Protection,	CO3	L3
24	Importing Packages, Interfaces..	CO3	L3
c	**Application Areas**	**-**	**-**
-	Students should be able employ / apply the Module learnings to . . .	-	-
1	• helps in creating user defined classes	CO3	L3
2	• helps in grouping classes and interfaces and class reuse.	CO3	L3
d	**Review Questions**	-	-

-	The attainment of the module learning assessed through following questions	-	-
20	What is meant by inheritance? Explain single level inheritance with an example.	CO3	L3
22	Explain how the super keyword is used to call the super class constructor.	CO3	L3
23	What is meant by multilevel inheritance? Give an example for creating multilevel inheritance	CO3	L3
24	What is an exception? Explain the different exception handling mechanism with an example.	CO3	L3
25	Create a try block that is likely to generate three types of exception and incorporate necessary catch blocks to catch and handle them.	CO3	L3
26	What isa nested try statement? Give an example for nested try statement.	CO3	L3
27	Explain multiple try and catch clauses to handle any three exceptions	CO3	L3
28	What is throw and throws? Give syntax for both and explain with an example	CO3	L3
29	Give the different between throw and throws.	CO3	L3
30	Explain how finally will work in exception with an example.	CO3	L3
e	**Experiences**	-	-
1	Students expected more practicals and demonstations	CO3	L2
2			

Module – 4

Title:	Multi Threaded Programming, Event Handling, Event Handling.	Appr Time:	8 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	At the end of the topic the student should be able to . . .	-	**Level**
1	Analyze multiple thread concepts and implement multi threaded programming in java to solve real world problems	CO4	L4
b	***Course Schedule***		
Class No	**Portion covered per hour**	**-**	**-**
25	Multi Threaded Programming: What are threads?	CO4	L4
26	How to make the classes threadable ; Extending threads; Implementing runnable;	CO4	L4
27	Synchronization; Changing state of the thread;	CO4	L4
28	Bounded buffer problems, read-write problem, producer consumer problems.	CO4	L4
29	**Event Handling:** Two event handling mechanisms; The delegation event model;	CO4	L4
30	Event classes; Sources of events; Event listener interfaces;	CO4	L4
31	Using the delegation event model;	CO4	L4
32	Adapter classes ; Inner classes.	CO4	L4
c	**Application Areas**	**-**	**-**
-	Students should be able employ / apply the Module learnings to . . .	-	-
1	• Multithreading in Javagives the ability to execute code by different threads to perform tasks in parallel or as a separate task without waiting for other to complete.	CO4	L4
2	Any program that uses GUI (graphical user interface) such as Java application written for windows, is event driven. Event describes the change in state of any object. **For Example :**Pressing a button, It is integral to the creation of applets and other types of GUI-based programs	CO4	L4
d	**Review Questions**	-	-
-	The attainment of the module learning assessed through following questions	-	-
31	Why is the "main" thread important? Write a Java program that creates	CO4	L4

	multiple child threads and also ensures that the main thread is the last stop.		
32	What do you mean by thread? Explain the different ways of creating threads.	CO4	L3
33	What is meant by multithreaded programming? Write a java program to create two threads, one to display "computer "science" and another to display "electronics communication" five times.	CO4	L4
34	What is synchronization? Explain with an example, how synchronization is implemented in Java.	CO4	L4
35	What is the need of synchronization? How can synchronization be achieved in Java?	CO4	L4
36	What is synchronization? Explain the role of synchronization with procedure and consumer problem.	CO4	L4
37	Describe the thread priority. How to assign and get thread priority.	CO4	L4
38	Explain how to create multiple threads in Java.	CO4	L4
39	What is meant by isAlive() and join(). Write a program to illustrate isAlive() and join() method.	CO4	L4
40	List and define several threads which are available in Thread class.	CO4	L4
e	**Experiences**	-	-
1	Students expected more practicals and demonstations	CO4	L2
2			

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs Code:	18CS45	Sem:	IV	Marks:	30	Time:	90 minutes
Course:	Object Oriented concepts						

-	-	**Note: Answer all questions, each carry equal marks. Module : 3, 4**	**Marks**	**CO**	**Level**
1	a	Distinguish between Method overloading and Method overriding in JAVA, with suitable examples	5	CO3	L3
	b	What is super? Explain the use of super with suitable example .	5	CO3	L3
	c	Write a JAVA program to implement stack operations.	5	CO3	L3
		OR			
2	a	Write short notes on i) Final class ii) abstract class	5	CO3	L3
	b	What is an interface? Write a program to illustrate multiple inheritance using interfaces.	5	CO3	L3
	c	Explain packages in java .	5	CO3	L3
3	a	What is synchronization? Explain with an example, how synchronization is implemented in Java.	5	CO4	L3
	b	What is producer – consumer problem? Explain the solution for producer – consumer problem with a program	5	CO4	L3
	c	What is delegation event model? Describe the significance of adapter class, with an example.	5	CO4	L3
		OR			
4	a	Explain action event class &adjustment event class	5	CO4	L3
	b	What is a thread ? explain 2 ways of creating thread.	5	CO4	L3
	c	What is delegation event model? Describe the significance of adapter class, with an example.	5	CO4	L3

b. Assignment – 2

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	18CS45	Sem:	IV	Marks:	10	Time:	90 – 120 minutes
Course:	OBJECT ORIENTED CONCEPTS				Module : 3, 4		

Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.

SNo	USN	Assignment Description	Marks	CO	Level
1		What is Class and Object? Explain the general form class in Java.	5	CO3	L3
2		Explain new operators used in Java	5	CO3	L3
3		Explain how an object is assigned to reference variable in Java.	5	CO3	L3
4		Write a Java Program to Illustrate the Parameterized Constructor.	5	CO3	L3
5		How a Superclass Variable Can Reference a Subclass Object. Explain the concept with suitable example.	5	CO3	L3
6		Explain the use of super() in java with suitable example	5	CO3	L3
7		Create a class figure in JAVA with following members' dim1, dim 2, and abstract method area. Create a subclasses Triangle, Rectangle with implantation of area.	5	CO3	L3
8		How to define and implement the interface in java. Explain it with example.	5	CO3	L3
9		How to create your package in java. Explain it with example.	5	CO3	L3
10		Explain the ways of handling exception in Java with example.	5	CO3	L3
11		Why is the "main" thread important? Write a Java program that creates multiple child threads and also ensures that the main thread is the last stop	5	CO4	L3
12		Describe the thread priority. How to assign and get thread priority.	5	CO4	L3
13		What is meant by isAlive() and join(). Write a program to illustrate isAlive() and join() method.	5	CO4	L3
14		What is synchronization? Explain the role of synchronization with procedure and consumer problem.	5	CO4	L3
15		List and define several threads which are available in Thread class.	5	CO4	L3

D3. TEACHING PLAN - 3

Module – 5

Title:	The Applet Class , Swings.	Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	At the end of the topic the student should be able to . . .	-	**Level**
1	Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using swings	CO5	L6
b	***Course Schedule***	-	-
Class No	**Portion covered per hour**	**-**	**-**
33	**The Applet Class:** Introduction, Two types of Applets; Applet basics;	CO5	L6
34	Applet Architecture; An Applet skeleton; Simple Applet display methods;	CO5	L6
35	Requesting repainting; Using the Status Window; The HTML APPLET tag;	CO5	L6
36	Passing parameters to Applets; getDocumentbase() and getCodebase(); ApletContext and showDocument();	CO5	L6
37	The AudioClip Interface; The AppletStub Interface;Output to the Console.	CO5	L6
38	**Swings:** Swings: The origins of Swing; Two key Swing features; Components and Containers;	CO5	L6
39	The Swing Packages; A simple Swing Application;	CO5	L6
40	Create a Swing Applet; Jlabel and ImageIcon; JTextField;The Swing Buttons; JTabbedpane; JScrollPane; JList; JComboBox; JTable.	CO5	L6
c	**Application Areas**	**-**	**-**

-	Students should be able employ / apply the Module learnings to . . .	-	-
1	• Applets are small Java applications that can be accessed on an Internet server, transported over Internet, and can be automatically installed and run as apart of a web document.	CO5	L6
2	• Applets takes very less response time as it works on the client side. It can be run on any browser which has JVM running in it.	CO5	L6
d	**Review Questions**	-	-
-	The attainment of the module learning assessed through following questions	-	-
41	What are applets? Explain different stages is the cycle of an applet?	CO5	L6
42	Write an applet program to display the message "WELCOME TO VTU BELGAUM". Set the background color to green and foreground to red	CO5	L6
43	What are the deficiency of AWT that are overcome by swings? Explain the two key features of swings.	CO5	L6
44	What is swing? List and explain the main swing features. Explain the different types of panes ofswing containers	CO5	L6
45	Explain component and containers in the swing	CO5	L6
46	Explain the types of Swing Buttons with syntax	CO5	L6
47	Write the steps to create Jtable. WAP to create a table with the column headingsName, USN, age, address &insert records and display	CO5	L6
48	Difference between swings and AWT	CO5	L6
49	Write a program to create table with headings "faname, lname, age" and insert at least 5 recoreds	CO5	L6
50	Create a swing applet that has two button named alpa and beta. When either of the button pressed it should display "alpa was pressed" and "beta was pressed" respectively	CO5	L6
e	**Experiences**	-	-
1	Students expected more practicals and demonstations	CO5	L6
2			

E3. CIA EXAM – 3

a. Model Question Paper - 3

Crs Code:		18CS45	Sem:	IV	Marks:	30	Time:	90 minutes		
Course:		OBJECT ORIENTED CONCEPTS								
-	**-**	**Note: Answer all questions, each carry equal marks. Module : 5**						**Marks**	**CO**	**Level**
1	a	List applet initialization and termination method? Write a java applet that set the background color cyan and foreground color red and output a string message "A simple Applet"?						5	CO9	L2
	b	What are applets? Explain the different stages in the life cycle of applet?						5	CO9	L2
	c	How to embed applet inside the html page? Explain with an example program.						5	CO9	L2
		OR								
1	a	Explain the Babinet's principles for the electromagnetic fields						5	CO9	L2
	b	Explain how horn antennas are constructed. Explain the differnet types of horn antenna.						5	CO9	L2
	c	Derive design equations for the horn antenna						5	CO9	L2
3	a	Explain JscrollPane with an example.						5	CO10	L2
	b	Explain JComboBox with an example.						5	CO10	L2
	c	Explain the MVC architecture of swings?						5	CO10	L2

		OR			
4	a	Write a program which displays the contents of an array in the tabular format.	5	CO10	L2
	b	What is a swing ? explain the components and containers in the swings	5	CO10	L2
	c	Explain the following with an example for each i)JTextField class ii)JButton class iii)JComboBox Class	5	CO10	L2

b. Assignment – 3

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	18CS45	Sem:	IV	Marks:	10	Time:	90 – 120 minutes
Course:	OBJECT ORIENTED CONCEPTS				Module : 5		

Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.

SNo	USN	Assignment Description	Marks	CO	Level
1		Explain the following with an example and syntax JTextField ,Jtable,JcomboBox,Jlabel ,Jbutton,JCheckBox	5	CO5	L2
2		Write a swing applet program to demonstrate with two JButtons named India and Srilanka. When either of button pressed it should display respective label with its icon. Refer the image icons “India.gif” and Srilanka.gif”. set initial label is “press the button	5	CO5	L2
3		Create a swing applet that has two button named alpa and beta. When either of the button pressed it should display “alpa was pressed” and “beta was pressed” respectively	5	CO5	L2
4		List the diffrenet type of swing buttons. Write a program to create four types of buttons on JApplet. Use suitable events to show actions on the buttons and use JLable to display the action invoked.	5	CO5	L2
5		List the different types of swing buttons. Write a program to create four types ofbuttons on JApplet. Use suitable events to show actions on the buttons and useJLabel to display the action invoked.	5	CO5	L2
6		What is swing? List and explain the main swing features. Explain the different types of panes ofswing containers.(	5	CO5	L2
7		Explain the types of Swing Buttons with syntax	5	CO5	L2
8		Explain component and containers in the swing	5	CO5	L2
9		Write an applet program to display the message “WELCOME TO VTU BELGAUM”. Set the background color to green and foreground to red.(	5	CO5	L2
10		What are the deficiency of AWT that are overcome by swings? Explain the two key features of swings	5	CO5	L2

F. EXAM PREPARATION

1. University Model Question Paper

Course:	OBJECT ORIENTED CONCEPTS					Month / Year	June /2020	
Crs Code:	18CS45	Sem:	IV	Marks:	100	Time:	180 minutes	
Module	**Note**	Answer all FIVE full questions. All questions carry equal marks.				**Marks**	**CO**	**Level**
1	a	List out the differences between procedure oriented and object oriented program				5	CO1	L2
	b	Explain function overloading with exaqmple.				5	CO1	L2
	c	What is constuctor?List the different type of constructors and explain default constructor with example.				6	CO2	L2

		OR			
	a	Explain the concept of object oriented program 1)Encapsulation ii)Polymorphism iii)Inheritance iv) data Initialization	8	CO1	L2
	b	Explain function prototyping with example.	5	CO1	L2
	c	How do namespace help in preventing pollutuion of the global name space?	3	C02	L2
2	a	Explain how java is robust and interactive.	5	CO3	L3
	b	Write java program to sum only first fve elements of the array using for each looping.	5	CO3	L3
	c	Explain the operation of the following operators with examplesi)% ii)>>>iii)&&	6	CO4	L2
		OR			
-	a	Write java program to initialize and display different types of integer and floating point variables.	6	CO3	L3
	b	What is type casting? Illustratewith an example.What is meant by automatic type promotion?	6	CO3	L3
	c	How to declare two dimensional arrays in java|?Explain with simple example.	4	CO4	L2
3	a	Describe the various levels of access protections available for packages and their implications.	8	CO5	L3
	b	Give the basic form of an exception handling block.	4	CO5	L3
	c	What is the importance of the clause finally?	4	CO6	L3
		OR			
-	a	Define inheritance.List the different types of inheritance.	5	CO5	L3
	b	Illustrate with example a super class variable can reference a subclass object.	6	CO5	L3
	c	Compare and contrast methof overloading and overriding.	5	CO6	L3
4	a	What is Thread?Explain two ways of creation of thread.	5	C7	L2
	b	What is synchronization?when do we use it?	5	C7	L3
	c	Explain keyEvents and mouseEvent class.	6	C7	L2
		OR			
-	a	Explain Delegation event model used to handle events in java.	8	C7	L3
	b	Explain the role of synchronizationwith producer and consumer problem.	8	C7	L2
	c			C8	L3
5	a	What is an applet?Explain five main methods of applet.	8	C9	L3
	b	Explain with syntax the following. i)JLabel ii)JTextField iii) JButton iv) JCheckBox	8	C9	L3
	c	Explain the various controls of the applets	8	C9	L2
		OR		C9	
	a	Create swing applet that has two buttons named beta and gamma.What either of the buttons pressed,it should display “beta pressed” and “gamma pressed” respectively.	8	C9	L2
	b	Explain getDocumetbase and getCodebase in applet class.	8	C9	L2
	c	Difference between Swings and applets.	6	C10	L3

2. SEE Important Questions

Course:		OBJECT ORIENTED CONCEPTS					Month / Year	June /2020
Crs Code:		18CS45	Sem:	4	Marks:	100	Time:	180 minutes
	Note	Answer all FIVE full questions. All questions carry equal marks.					-	-
Module	Qno.	Important Question					**Marks**	**CO**	**Year**
1	1	Explain how JAVA is robust and architecture neutral					8	2018	2018

				Jan	Jan
	2	Explain the features/ Buzzwords of java language.	4	2018 Jan	2018 Jan
	3	How "compile once and run anywhere"is implemented in JAVA	3	2018 Jan	2018 Jan
	4	Explain how JAVA is robust and architecture neutral	4	2018 Jan	2018 Jan
	5	List out the difference between procedure oriented program and object oriented program.	6	2017 Jan	2017 Jan
	6	Explain function overloading with example.	5	2017 Jan	2017 Jan
	7	What is constructor? List the different type of constructors and explain default constructor with example.	8	2017 Jan	2017 Jan
	8	Explain the concept of object oriented program i) Encapsulation ii) Polymorphism iii) Inheritance iv) Data initialization.	8	2017 Jan	2017 Jan
	9	Explain function prototyping with example.	6	2017 Jan	2017 Jan
2	1	1).Explain how java is robust and interactive.	8	CO2	2012
	2	2).Write java program to sum only first five elements of the array using for each looping.	8	CO2	2010
	3	3). Explain the operation of the following operators with example. i) % ii) >>> iii) &&	8	CO2	2010
	4	Write java program to initialize and display different types of integer and floating point variables.	8	CO2	
	5	What is type casting? Illustrate with an example. What is meant by automatic type promotion?	6	CO2	
	6	How to declare two dimensional arrays in java? Explain with simple example.	6	CO2	
3	1	Describe the various levels of access protections available for packages .	8	CO3	
	2	Give the basic form of an exception handling block.	4	CO3	
	3	W'hat is the importance of the clause finally?	4	CO3	
	4	Define inheritance. List the different types of inheritance.	8	CO3	
	5	Illustrate with example a super class variable can reference a subclass object.	4	CO3	
	6	Compare and contrast method overloading and overriding.			
4	1	What is Thread? Explain two ways of creation of thread.	8	CO4	2017 Jul
	2	What is synchronization? When do we use it?	4	CO4	2017 Jul
	3	Explain keyEvents and mouseEvent class.	4	CO4	2017 Jul
	4	Explain Delegation event model used to handle events in java.	8	CO4	2017 Jul
	5	Explain the role of synchronization with producer and Consumer.	8	CO4	2017 Jul

5	1	What is an applet? Explain five main methods of applet.	8	CO5	2017 Jul
	2	Explain with syntax the following i)JLabel ii) JTextField iii)JButton iv)JCheckBox	8	CO5	2017 Jul
	3	Create swing applet that has two buttons named beta and gamma. When either of the buttons pressed, it should display "beta pressed"and "gamma was pressed"respectively.	8	CO5	2017 Jul
	4	Explain getDocumentbase apd getCodebase in apple class.	8	CO5	2017 Jul

Course Outcome Computation

Academic Year:

Odd / Even semester

INTERNAL TEST	**T1**						**T2**					
Course Outcome	**CO1**		**CO2**		**CO3**		**CO4**		**CO5**		**CO6**	
QUESTION NO	**Q1**	**LV**	**Q2**	**LV**	**Q3**	**LV**	**Q1**	**LV**	**Q2**	**LV**	**Q3**	**LV**
MAX MARKS	10	-	10	-	10	-	10	-	10	-	10	-
USN-1	5	2	10				10	3	9	3	4	1
USN-2	5	2	8	3								
USN-3	7	3	7	3	10	3	8	3	8	3	5	2
USN-4					4	1	10	3	8	3	6	2
USN-5	8	3	6	2	9	3	10	3	8	3		
USN-6							10	3	9	3	4	1
Average CO Attainment		2.5		2.75		2.33		3		3		1.5

LV Threshold : 3:>60%, 2:>=50% and <=60%, 1: <=49%

CO1 Computation :(2+2+2+3)/4 = 10/4=2.5

PO Computation

Program Outcome	PO1	PO3	PO3	PO1	PO12	PO12	
Weight of CO - PO	3	1	3	2	2	3	

Course Outcome	CO1		CO2		CO3		CO4		CO5		CO6	
Test/Quiz/Lab			T1						T2			
QUESTION NO	Q1	LV	Q2	LV	Q3	LV	Q1	LV	Q2	LV	Q3	LV
MAX MARKS	10	-	10	-	10	-	10	-	10	-	10	-
USN-1	5	2	10	3			10	3	9	3	4	1
USN-2	5	2	8	3								
USN-3	7	3	7	3	10	3	8	3	8	3	5	2
USN-4					4	1	10	3	8	3	6	2
USN-5	8	3	6	2	9	3	10	3	8	3		
USN-6							10	3	9	3	4	1
Average CO Attainment		2.5		2.75		2.33		3		3		1.5