

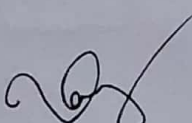


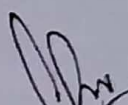
**Sir M. Visvesvaraya Institute of Technology**  
Bengaluru - 562157  
Approved by AICTE | Affiliated to VTU Belagavi | Accredited by NAAC  
**Department of MCA**  
**Course File**

Name of the Faculty : VASANTHA S  
Name of the Subject with code : Object Oriented Programming Using Java – 22MCA22  
Academic Year : 2023-24 Semester and year : 2<sup>nd</sup> Sem 1<sup>st</sup> Year

SL No	Contents in Course File	Page Number
1.	Department Vision, Mission, PEOs, PSOs, POs	
2.	Subject Allotment order	
3.	Course Information sheet	
4.	Calendar of Events	
5.	Time Table of the class and Individual Time Table of the faculty	
6.	Student List	
7.	Syllabus copy for the course	
8.	Lesson Plan	
9.	Evaluation Pattern for the course	
10.	CO-PO-PSOs Mapping and justification	
11.	CO-PO Attainment sheet of the previous year for the same course Actions taken to improve the attainment and report MoM from DAAC(DEPT Academic Advisory Committee)	
12.	Lab Course Plan with CO/PO/PSO Mapping for Lab(IPCC) CO PO mapping print out sheet for Lab CO-PO Justification for the correlation given 1,2,3 for Lab CO-PO Attainment sheet for Lab CO-PO Attainment sheet of the previous year for the same lab course Continuous Improvement Evaluation (CIE) in Lab sheet.	
13.	Gaps in the curriculum as identified during the introduction of new scheme	
14.	Topics Beyond Syllabus to bridge the Gaps in the Curriculum	
15.	Internal Test Question papers with CO –PO mapping and Blooms Taxonomy with scheme of evaluation.	

16.	Internal Marks	
17.	List of slow learners and attendance sheet of the remedial classes conducted and impact analysis.	
18.	List of fast learners and their achievements	
19.	Tutorial sheets(If applicable)	
20.	Course Material	
21.	Pedagogical/Innovative Teaching	
22.	Impact Analysis sheet of Assignment/Seminar/Workshop along with PO attainment	
23.	Course end survey by the students.	
24.	Student Feedback	
25.	Result Analysis	
26.	CO-PO Attainment sheet	
27.	Additional Responsibilities if any .....	

  
Signature of Staff

  
Signature of HOD

## **DEPT. OF MCA**

### **VISION**

- To develop professionals having good knowledge skills and attitude to be competent enough in the global environment, to serve the society and IT industry.

### **MISSION**

- To establish an environment for education and skill development on par with global environment.
- Providing state of art facilities, to achieve high quality in computer applications.
- To inculcate social and ethical responsibilities among the students to serve society and industry.

### **PROGRAMME EDUCATIONAL OBJECTIVES (PEO)**

1. Educate students to be successful computer application professional in a global environment.
2. Enhance the student's prospects for a career in academics and provide access to higher degrees by research programs and practice lifelong learning.
3. Provide exposure to cutting edge technologies and training to work on multidisciplinary projects in a team.
4. Develop a sense of social, ethical and professional responsibility with a capacity to demonstrate an understanding and application of the human dimension of technology and impact on mankind.

### **PROGRAMME SPECIFIC OUTCOMES (PSO)**

1. Our students will have a sufficient understanding of the fundamentals of computer science, analytical skills and critical thinking for a continued learning and research and to work effectively in multi-disciplinary projects.
2. Our students will have the ability to design and develop software's to meet the requirements of the industry and the society.

### **PROGRAMME OUTCOMES (PO)**

1. Computational Knowledge: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization the abstraction and conceptualization of computing models from defined problems and requirements.
2. Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.



3. Design / Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
4. Conduct investigations of complex Computing problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
6. Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.
7. Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.
8. Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
9. Communication Efficacy: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.
10. Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.
11. Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.
12. Innovation and Entrepreneurship: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

**SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY**  
**BANGALORE 562 157**  
**DEPARTMENT OF COMPUTER APPLICATIONS (MCA)**

Date: 24.06.2024

To

Mr. Vasantha S  
Asst. Professor  
Dept. of MCA  
Sir MVIT

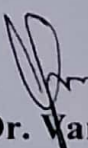
Respected Sir/Madam,

Subject: Subject Allotment letter - Reg.

This is to inform you that, further to the discussions held in the meeting, you have been allotted the following subjects to be handled by you for the academic term December 2023 to March 2024 (EVEN SEM)

Sl. No	Subject Code	Subject Name
1	22MCA22	Object Oriented Programming Using Java
2	22MCAL28	Java Programming Laboratory
3	22MCA29	Seminar

**Note:** Faculty is hereby informed to prepare lesson plan, notes of lessons and PPT for the subjects allotted.

  
**Dr. VaniPriya CH**

### COURSE INFORMATION SHEET

Course Name / Code	Object Oriented Programming Using Java/ 22MCA22		
Degree / Branch	MCA / MCA		
Course Credit	3		
Course Category	Core Subject		
Modules Covered			
Course Teacher Contact:	Course Teacher Name	Contact Details	
		Mobile	E-mail
	VASANTHA S	9880763649	Vasantha_mca@sirmvit.edu
Head of the Department :	Dr. C H VANIPRIYA		





# ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

(ವಿ. ತ. ಯು. ಅಧಿನಿಯಮ 1994 ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ)

## VISVESVARAYA TECHNOLOGICAL UNIVERSITY

(State University of Government of Karnataka Established as per the VTU Act, 1994)

Phone : 0831-2498100 / 2

Fax : 0831-2405467

Email : registrar@vtu.ac.in

Web : https://vtu.ac.in

Prof. B. E. Rangaswamy Ph.D.  
REGISTRAR

REF: VTU/BGM/BoS/Academic Calendar/2024-25 16/13

DATE: 16/07/2024

### NOTIFICATION

**Subject:** Tentative Academic Calendar of 2<sup>nd</sup> semester of Post Graduate programs regarding...

**Reference:** Approval of Dean Faculty of Engineering dated: 02.07.2024  
The approval Hon'ble Vice-Chancellor, dated 05.07.2024

The tentative academic calendar concerned the 2<sup>nd</sup> semester of Post Graduate programs for the academic year 2023-24 are with this notified as mentioned below;

	II semester MBA	II semester M. Tech.	II semester M. Arch	II Semester M. Plan	II semester MCA	II Semester M.Sc.
Commencement of the Semester	15.07.2024	15.07.2024	15.07.2024	15.07.2024	15.07.2024	15.07.2024
Internship	----	----	----	----	----	----
Commencement of Classes	15.07.2024	15.07.2024	15.07.2024	15.07.2024	15.07.2024	15.07.2024
Last Working day of the Semester	19.10.2024	19.10.2024	19.10.2024	19.10.2024	19.10.2024	19.10.2024
Practical / Viva-Examination	----	21.10.2024 To 26.10.2024	21.10.2024 To 26.10.2024	21.10.2024 To 26.10.2024	21.10.2024 To 26.10.2024	21.10.2024 To 26.10.2024
Theory Examinations	22.10.2024 To 20.11.2024	28.10.2024 To 16.11.2024	28.10.2024 To 16.11.2024	28.10.2024 To 16.11.2024	28.10.2024 To 16.11.2024	28.10.2024 To 16.11.2024
Commencement of NEXT Semester	25.11.2024	25.11.2024	25.11.2024	25.11.2024	25.11.2024	25.11.2024

#### Please Note:

- The academic sessions for the aforementioned semesters should commence on the **date mentioned** above.
- If required, the college can plan extra classes on 1<sup>st</sup> and 3<sup>rd</sup> Saturdays and Sundays to complete academic activities within the duration mentioned.
- The faculty/staff shall be available to undertake any work assigned by the university.
- Notification regarding the Calendar of Events relating to the conduct of University **Examinations** will be issued by the Registrar (Evaluation) from time to time.
- Academic Calendar **may be modified** based on guidelines/directions issued in the future by UGC/AICTE/State Government.
- Autonomous Colleges must adhere to the Academic Calendar as well. Any modifications to the academic terms and examination schedule that Autonomous Colleges choose to make can only be made with the University's concurrence.

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# SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

## ACADEMIC CALENDAR FOR EVEN SEMESTER 2023-24 FOR UG & PG

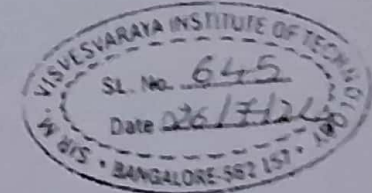
Particulars	8 <sup>th</sup> Sem BE 2018 Scheme	6 <sup>th</sup> Sem BE 2021 Scheme	4 <sup>th</sup> Sem BE 2022 Scheme	2 <sup>nd</sup> Sem BE 2022 Scheme	4 <sup>th</sup> Sem MBA 2022 Scheme	4 <sup>th</sup> Sem MCA 2022 Scheme	4 <sup>th</sup> Sem MTech	2 <sup>nd</sup> Sem MBA	2 <sup>nd</sup> Sem MCA	2 <sup>nd</sup> Sem MTech
Commencement of Even Semester	12-02-2024	29-04-2024	22-04-2024	06-03-2024	10-06-2024	22-04-2024	22-04-2024	15-07-2024	15-07-2024	15-07-2024
Students Induction Programme /Internship/*Societal Project	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Commencement of Classes	12-02-2024	29-04-2024	22-04-2024	06-03-2024	10-06-2024	22-04-2024	22-04-2024	15-07-2024	15-07-2024	15-07-2024
Last Working Day	11-05-2024	31-07-2024	07-08-2024	29-06-2024	28-09-2024	27-07-2024	27-07-2024	19-10-2024	19-10-2024	19-10-2024
Internship Viva/Practical / Viva Examination	NA	01-08-24 to 10-08-24	08-08-24 to 17-08-24	01-07-24 to 11-07-24	NA	28-07-24 to 29-07-24	NA	NA	21-10-24 to 26-10-24	21-10-24 to 26-10-24
Theory Examination	16-05-24 to 30-05-24	12-08-24 to 14-09-24	19-08-24 to 12-09-24	15-07-24 to 10-08-24	30-09-24 to 06- 11-24	01-08-24 to 23-08-24	01-08-24 to 23-08-24	22-10-24 to 20-11-24	28-10-24 to 16-11-24	28-10-24 to 16-11-24
First Test Dates	March 22-23,2024	June 10-12, 2024	June 10-12, 2024	May 13-17,2024	July 22-6, 2024	May 31,2024	NA	21-08-24 to 24-08-24	21-08-24 to 24-08-24	21-08-24 to 24-08-24
Second Test Dates	April 22-23,2024	July 03-04, 2024	July29-31, August 02-05, 2024	June 24- 27,2024	September 17-23, 2024	June 28, 2024	NA	07-10-24 to 10-10-24	18-09-24 to 20-09-24	18-09-24 to 20-09-24
Third Test Dates	May 08-09,2024	July 25-27, 2024	NA	NA	NA	July 23, 2024	NA	NA	14-10-24 to 16-10-24	14-10-24 to 16-10-24
Submission of Report to University	NA	NA	NA	NA	13-09-24 to 28- 09-24	13-07-24 to 27- 07-24	01-08-24 to 20-08-24	NA	NA	NA
Commencement of ODD Semester	NA	23-09-2024	16-09-2024	19-08-2024	NA	NA	NA	25-11-2024	25-11-2024	25-11-2024

### LIST OF HOLIDAYS (upto December, 2024)

Mahashivarathri	08.03.2024
Good Friday	29.03.2024
Ugadi	09.04.2024
Ramzan	11.04.2024
May Day	01.05.2024
Basava Jayanthi	10.05.2024
Bakrid	18.06.2024
Muharram	17.07.2024
Independence Day	15.08.2024
Ganesh Chaturthi	07.09.2024
Id Meelad	16.09.2024
Gandhi Jayanthi	02.10.2024
Ayudha Pooja	11.10.2024
Vijayadashmi	12.10.2024
Valmiki Jayanthi	17.10.2024
Naraka Chaturdashi	31.10.2024
Rajyotsava Day	01.11.2024
Balipadyami	02.11.2024
Kanakadasa Jayanthi	18.11.2024
Christmas	25.12.2024

### IMPORTANT DATES (Tentative)

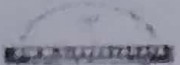
Photo Shoot	23-03-2024
Graduation Day	19-04-2024
College Day	TAL



*Selamb*  
PRINCIPAL  
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY  
H. N. Reddy Nagar, H. N. Reddy Nagar, H. N. Reddy Nagar,  
International Airport Road, BANGALORE-562 157

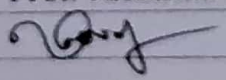
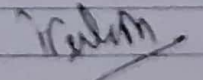






	<b>Sir M. Viswambharaya Institute of Technology</b> <b>Bangalore</b>	<b>Record Formats</b> (ISO 9001:2008)
	R/PP04/02      Rev:02	<b>EVEN SEMESTER TIME TABLE -W.E.F. 15.07.2024</b>

K/1101/02											
Sem/Sec	II	Branch	MCA				Strength	56	ROOM NO	117	
Day	9.00am to 9:55am	9:55 am to 10:50 am	10:50 am to 11:00 am	11:00 am to 11:55 am	11:55 am to 12:50pm	12:50 pm to 1:35 pm	1:35 pm to 2:30 pm	2:30 pm to 3:25 pm	3:25 pm to 4:20 pm		
Monday	22MCA22	22MCA23	-	22MCA263	22MCA21		22MCA24	22MCA29/22MCA24			
Tuesday	22MCA263	22MCA21		22MCA22	22MCA23		22MCA252	22MCA29/22MCA24			
Wednesday	22MCA252	22MCA24		22MCA263	22MCA22						
Thursday	22MCAL27/22MCAL28			22MCAL27/22MCAL28	22MCA252		22MCA23	22MCA263	LG		
Friday	22MCAL27/22MCAL28			22MCAL27/22MCAL28	22MCA24		22MCA252	22MCA21	22MCA23		

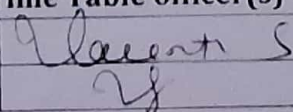
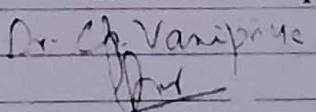
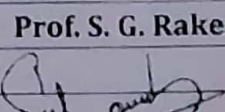
Sl.No.	Sub. Code	Subject Name	Faculty
1	22MCA21	Database Management System	Ms. Sneha Bharti
2	22MCA22	Object Oriented Programming using Java	Mr. Vasantha S.
3	22MCA23	Software Engineering	Ms. Vani Harave
4	22MCA24	Web Technologies	Ms. R. Latha
5	22MCA252	Data mining and business intelligence	Dr. Ch. Vanipriya
6	22MCA263	Mobile Application Development	Mr. Raghavendra rao B. G.
7	22MCAL27	DBMS Laboratory	Ms. Sneha Bharti/ Ms. R. Latha
8	22MCAL28	Java Programming Laboratory	Mr. Vasantha S./ Mr. Raghavendra rao B. G.
9	22MCA29	Seminar	Mr. Raghavendra Rao B.G./ Mr. Vasantha S.
10	22MCA24	Web Technology(IPCC) Lab	Ms. R. Latha/Ms. Vani Harave
Class Advisor(s): Ms. Sneha Bharti			

Time Table officer(s) - TTO		Chief Time Table Officer	Head of the Department	Principal
Name	Prof. Vasantha S	Prof. S.B.Halesh	Dr. Ch. Vanipriya	Prof. S. G. Rakesh
Signature				

Individual Faculty Time Table				Department		MCA	
Name	Mr.VASANTHA . S				Designation	ASSISTANT PROFESSOR	
Day / Hrs	1	2	3	4	5	6	7
Monday	22MCA22	22MCA44 - Project Work Phase - 2				←22MCA29-→	
Tuesday	22MCA44 - Project Work Phase - 2		22MCA22	22MCA44 - Project Work Phase - 2		←22MCA29-→	
Wednesday		22MCA422		22MCA22			
Thursday	←22MCA28-→ 22MCA422			22MCA422	LG		
Friday	22MCA422 ←22MCA28-→		22MCA422				
Saturday							

Sl. No.	Sub. Code	Subject Name	Credit	Units	LG	Project Guide	Mini Project	Internship	Technical Seminar	SEMINAR	Total
	22MCA22	OBJECT ORIENTED PROGRAMMING USING JAVA	3	1.5	1			1			21
	22MCA28	JAVA PROGRAMMING LABORATORY	2	1.5							
	22MCA29	SEMINAR	2	1						1	
	22MCA422	SEMANTIC WEB AND SOCIAL NETWORKS	4	2							
	22MCA44	PROJECT WORK PHASE - 2	16	8	1	2.5					

\* SDA - Skill Development Activities

Time Table officer(s) - TTO		Head of the Department	Principal
Name	Vasantha S	Dr. Ch. Vanipraye	Prof. S. G. Rakesh
Signature			



**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY**

**Department of MCA**

**STUDENT LIST 2023 BATCH - 2nd sem MCA**

Sl.No.	USN	Student Name
1	1MV23MC001	ABHISHEK A PAREKAR
2	1MV23MC002	ABHISHEK KUMAR
3	1MV23MC003	AJAY BG
4	1MV23MC004	AMIT KUMAR
5	1MV23MC005	AMURU MOTHEESH
6	1MV23MC006	ANKITA
7	1MV23MC007	ANKITHA V
8	1MV23MC008	BALAJI K
9	1MV23MC009	BHAVYA SRI.B.H.
10	1MV23MC010	BRAJESH KUMAR
11	1MV23MC011	BRAJESH KUMAR
12	1MV23MC012	CHANDAN L
13	1MV23MC013	CHANDAN .S
14	1MV23MC014	CHANDANA ARAVIND PATIL
15	1MV23MC015	DEEPIKA G
16	1MV23MC016	DEEPIKA T S
17	1MV23MC017	DONELA VINAYAKA
18	1MV23MC018	GAJENDRA S
19	1MV23MC019	GIRAKA THARUN KUMAR
20	1MV23MC020	HARISH GIRIYA GOUDA
21	1MV23MC021	HARSH
22	1MV23MC022	HARSHITHA B M
23	1MV23MC023	K SAI TEJA
24	1MV23MC024	KARTHIK N
25	1MV23MC025	KAVITHA M Y
26	1MV23MC026	KAVYA C K
27	1MV23MC027	KAVYA G P
28	1MV23MC028	KOMALA M S
29	1MV23MC029	MANASA A
30	1MV23MC030	MEGHANA H N



**SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY****Department of MCA****STUDENT LIST 2023 BATCH - 2nd sem MCA**

Sl.No.	USN	Student Name
31	1MV23MC031	MEGHANA T M
32	1MV23MC032	MONISHA A R
33	1MV23MC033	NANDINI UMASHANKAR
34	1MV23MC034	NIKITA
35	1MV23MC035	PANDIKUNTA MANJU
36	1MV23MC036	PUNITH KUMAR D N
37	1MV23MC037	RAKSHA
38	1MV23MC038	RAMNIVAS S
39	1MV23MC039	SAGAR S
40	1MV23MC040	SAHANA K NAIR
41	1MV23MC041	SANJANA V
42	1MV23MC042	SHILPA P
43	1MV23MC043	SHREELAKSHMI K A
44	1MV23MC044	SHREYA RAVISH NAYAK
45	1MV23MC045	SINCHANA H S
46	1MV23MC046	SOUVIK CHAKRABORTY
47	1MV23MC047	SUPRIYA D KHORVI
48	1MV23MC048	SUSHANTH D
49	1MV23MC049	SUSHMA
50	1MV23MC050	SUSHMITHA K M
51	1MV23MC051	SUSHMITHA.M
52	1MV23MC052	TEJAS SURESH DESHBHANDARI
53	1MV23MC053	TEJASVI BADAMI
54	1MV23MC054	VARSHA B
55	1MV23MC055	YASHASWINI J
56	1MV23MC056	YUVARAJ S

Object Oriented Programming Using Java			
Course Code	22MCA22	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	3:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03
<b>Course Learning objectives:</b> <ul style="list-style-type: none"> <li>Understand the basic object oriented programming concepts and apply them in problem solving.</li> <li>Use object oriented programming concepts to solve real world problems.</li> <li>Explain the concept of class and objects with access control to represent real world entities.</li> <li>Demonstrate the behavior of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.</li> <li>Use overloading methodology on methods and constructors to develop application programs.</li> <li>Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords.</li> <li>Describe the concept of interface and abstract classes to define generic classes.</li> <li>Use dynamic and static polymorphism to process objects depending on their class Understand the basics of java console and GUI based programming.</li> </ul>			
<b>Module-1</b>			
OOPS CONCEPTS AND JAVA PROGRAMMING: OOP concepts: Classes and objects, data abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, procedural and object oriented programming paradigm. Java programming: History of java, comments data types, variables, constants, scope and life time of variables, operators, operator hierarchy, expressions, type conversion and casting, enumerated types, control flow statements, jump statements, simple java stand alone programs, arrays, console input and output, formatting output, constructors ,methods, parameter passing, static fields and methods, access control, this reference, overloading methods and constructors, recursion, garbage collection, exploring string class.			
Teaching-Learning Process	Chalk and board, Active Learning, Problem based learning		
<b>Module-2</b>			
MULTIPLE INHERITANCE: Inheritance: Inheritance hierarchies, super and subclasses, member access rules, super keyword, preventing inheritance: final classes and methods, the object class and its methods; Polymorphism: dynamic binding, method overriding, abstract classes and methods;			
Teaching-Learning Process	Chalk and board, Active Learning, Problem based learning		
<b>Module-3</b>			
INTERFACES AND PACKAGES: Interface: Interfaces VS Abstract classes, defining an interface, implement interfaces, accessing implementations through interface references, extending interface; Packages: Defining, creating and accessing a package, understanding CLASSPATH, importing packages.			
Teaching-Learning Process	Chalk and board, Active Learning, Problem based learning		
<b>Module-4</b>			
EXCEPTION HANDLING: Exception Handling: Benefits of exception handling, the classification of exceptions , exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws and finally, rethrowing exceptions, exception specification, built in exceptions, creating own exception sub classes.			
Teaching-Learning Process	Chalk and board, Active Learning, Problem based learning		
<b>Module-5</b>			
GUI PROGRAMMING AND APPLETS: GUI Programming with Java: The AWT class hierarchy, introduction to swing, swings Vs AWT, hierarchy for swing components.Containers: JFrame, JApplet, JDialog, Jpanel, overview of some swing components: JButton, JLabel, JTextField, JTextArea, simple applications.Layout management: Layout manager types,			



border, grid and flow. Applets: Inheritance hierarchy for applets, differences between applets and applications, life cycle of an applet, passing parameters to applets.

**Teaching-Learning Process**

Chalk and board, Active Learning, Problem based learning

**Assessment Details (both CIE and SEE)**

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

**Continuous Internal Evaluation:**

1. Three Unit Tests each of 20 Marks
2. Two assignments each of 20 Marks or one Skill Development Activity of 40 marks to attain the COs and POs

The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

**Semester End Examination:**

1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
2. The question paper will have ten full questions carrying equal marks.
3. Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
4. Each full question will have a sub-question covering all the topics under a module.
5. The students will have to answer five full questions, selecting one full question from each module

**Suggested Learning Resources:**

**Text Books:**

1. Herbert Schildt and Dale Skrien, "Java Fundamentals – A comprehensive Introduction", McGraw Hill, 1st Edition, 2013.
2. Herbert Schildt, "Java the complete reference", McGraw Hill, Osborne, 7th Edition, 2011.
3. T.Budd, "Understanding Object- Oriented Programming with Java", Pearson Education, Updated Edition (New Java 2 Coverage), 1999.

**Reference books:**

1. P.J.Dietel and H.M.Dietel, "Java How to program", Prentice Hall, 6th Edition, 2005.
2. P.Radha Krishna, "Object Oriented programming through Java", CRC Press, 1st Edition, 2007.
3. S.Malhotra and S. Choudhary, "Programming in Java", Oxford University Press, 2nd Edition, 2014.

**Web links and Video Lectures (e-Resources):**

<http://java.sun.com>  
<http://www.oracle.com/technetwork/java/index.html>  
<http://java.sun.com/javase>  
<http://www.oracle.com/technetwork/java/javase/overview/index.html>  
<http://download.oracle.com/javase/7/docs/api/index.html>



BANGALORE  
R/PP04/04LESSON PLAN  
EVEN SEMESTER

SEM: II

22MCA22: Object Oriented programming using java

With effect from 15-07-2024

COs

WEEK	DATE		TOPICS PLANNED	COs
	FROM	TO		
1	15.07.24	19.07.24	OOPS CONCEPTS AND JAVA PROGRAMMING: OOP concepts: Classes and objects, data abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, procedural and object oriented programming paradigm. Java programming: History of java, comments data types, variables, constants,	CO1
2	22.07.24	26.07.24	scope and life time of variables, operators, operator hierarchy, expressions, type conversion and casting, enumerated types, control flow statements, jump statements, simple java stand alone programs, arrays, console input and output, formatting output,	CO1
3	29.07.24	03.08.24	constructors ,methods, parameter passing, static fields and methods, access control, this reference, overloading methods and constructors, recursion, garbage collection, exploring string class. MULTIPLE INHERITANCE: Inheritance: Inheritance hierarchies,	CO1, CO2
4	05.08.24	09.08.24	super and subclasses, member access rules, super keyword,	CO2
5	12.08.24	16.08.24	preventing inheritance: final classes and methods, the object class and its methods;	CO2
6	19.08.23	23.08.24	Polymorphism: dynamic binding, method overriding, abstract classes and methods; INTERFACES AND PACKAGES: Interface: Interfaces VS Abstract classes,	CO2, CO3
7	26.08.24	30.08.24	defining an interface,implement interfaces, accessing implementations through interface references, extending interface;	CO3
9	02.09.24	06.09.24	Packages: Defining, creating and accessing a package,	CO3
10	09.09.24	13.09.24	understanding CLASSPATH, importing packages. EXCEPTION HANDLING:	CO3, CO4
11	17.09.24	20.09.24	Exception Handling: Benefits of exception handling, the classification of exceptions ,exception hierarchy, checked exceptions and unchecked exceptions,	CO4
12	23.09.24	30.09.24	usage of try, catch, throw, throws and finally, rethrowing exceptions, exception specification, built in exceptions,creating	CO4

Prepared by: Mr. Vasantha S  
Designation: Assistant Professor

Signature

Approved by: Dr. Ch. Vanipriya  
Designation: H.O.D

Signature





SIR M. VISVESVARAYA INSTITUTE OF  
TECHNOLOGY  
BANGALORE

RECORD FORMAT  
(ISO 9001:2008)

R/PP04/04

LESSON PLAN  
EVEN SEMESTER

SEM: II

22MCA22: Object Oriented programming using java

With effect from 15-07-2024

WEEK	DATE		TOPICS PLANNED	COs
	FROM	TO		
			own exception sub classes.	
13	01.10.24	04.10.24	GUI PROGRAMMING AND APPLETS: GUI Programming with Java: The AWT class hierarchy, introduction to swing, swings Vs AWT, hierarchy for swing components. Containers: JFrame, JApplet, JDialog, Jpanel, overview of some swing components: JButton, JLabel, JTextField, JTextArea, simple applications. Layout management: Layout manager types, Credits corrected	CO5
14	07.10.24	10.10.24	border, grid and flow. Applets: Inheritance hierarchy for applets, differences between applets and applications.	CO5
15	14.05.24	18.18.24	life cycle of an applet, passing parameters to applets REVISION	CO5

Prepared by: Mr. Vasantha S  
Designation: Assistant Professor

Signature

Approved by: Dr. Ch. Vanipriya  
Designation: H.O.D

Signature

Evaluation Pattern for the course (2022 Scheme)

Component	Marks
<b>Internal Exam</b> 1. Internal Examinations I, II, III : 20% 2. Online Quiz/Assignments/Seminars/Mini Project : 30%	50
<b>External Exam</b> Semester End Examination ( SEE) : 50%	50
<b>Total</b>	<b>100</b>



**CO-PO-PSO MAPPING:****CO-PO**

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	-	2	-	-	-	-	-	-	-
CO2	3	3	-	-	2	-	-	-	-	-	-	-
CO3	3	2	-	-	2	-	-	-	-	-	-	-
CO4	3	3	-	-	2	-	-	-	-	-	-	-
CO5	3	2	-	-	3	-	-	-	-	-	-	-

**CO-PSO**

CO's	PSO1	PSO 2
CO1	3	-
CO2	3	2
CO3	3	2
CO4	3	2
CO5	3	2

**JUSTIFICATION FOR THE CORRELATION LEVEL ASSIGNED IN EACH CELL OF THE TABLE ABOVE.**

Mapping	LOW/MEDIUM/ STRONG	Justification
CO1-PO1	H	Understanding the basic concepts of OOPs.
CO2-PO1	H	Understanding the basic concepts of Inheritance
CO3-PO1	H	Understanding the basic concepts of Multiple Inheritance and Packages
CO4-PO1	H	Understanding the basic concepts of Exception handling in java
CO5-PO1	H	Understanding the basic concepts of AWT and Swings
CO1-PO2	H	Implement the stand alone application to solve the basic problem using object oriented concepts
CO2-PO2	H	Implement the Inheritance
CO3-PO2	M	Implement the Multiple inheritance
CO4-PO2	H	Implement the Exception handling
CO5-PO2	M	Design standalone web application using AWT and Swings
CO1-PO5	M	Implementation of basic oops concepts using modern tool

CO2-PO5	M	Implementation of basic inheritance concept using modern tool
CO3-PO5	M	Implementation of interface and packages using modern tool
CO4-PO5	M	Implementation of exception handling using modern tool
CO5-PO5	H	Implementation of applet and AWT GUI using modern tool

**GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:**

Sl	DESCRIPTION	PROPOSED ACTIONS	PO
1	Case study or Mini Project	Develop web application using applet/AWT/SWRING	PO5,PO7,PO8, PO9,PO11

**CONTENT BEYOND SYLLABUS/ADVANCED TOPICS:**

Sl. No.	DESCRIPTION	PO MAPPING
1	Webinar on Java Full Stack Development	PO7





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**Sir M. Visvesvaraya Institute of Technology**  
**Bangalore 562 157**  
**INTERNAL TEST PAPER**

TEST NO : 1 SEM : 2 COURSE / BRANCH : MCA MAX. MARKS : 40 DURATION : 90 Min  
 SUBJECT : Object Oriented Programming Faculty Name : Vasantha S  
 Using Java

**Instructions: Answer any one Question from each PART**

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)  
 CO – Course Outcomes PO – Program Outcomes, PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
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**PART A**

1	a) Explain the features or buzzwords of java.	10	CO1	L2	PO1	1.7.1
	b) Describe type casting, type conversion and automatic type promotion with a suitable example.	10	CO1	L2	PO1	1.7.1

**OR**

2	a) Explain the operations of the following operators with examples i) >>> ii) & iii) instanceof iv) >>	10	CO1	L2	PO1	1.7.1
	b) Describe the following constructs with examples. i) Labeled break ii) Labeled continue	10	CO1	L2	PO1	1.7.1

**PART B**

3	a) Describe briefly about the primitive data types in JAVA.	10	CO1	L2	PO1	1.7.1
	b) Discuss with a suitable example String class any three character extraction methods.	6	CO1	L2	PO1	1.7.1
	c) Write a java program to find area of the circle by accepting radius from user.	4	CO1	L3	PO2	2.8.1

**OR**

4	a) Discuss with a suitable program constructor overloading and method overloading.	10	CO1	L2	PO1	1.7.1
	b) Write a Short note on i)bytecode ii)Unicode ii)Garbage Collector	6	CO1	L2	PO1	1.7.1
	c) Write a java program to find circumference of the circle by accepting radius from user.	4	CO1	L3	PO2	2.8.1

CO1: Understanding the basic concepts of object oriented Programming.

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 QPSC Member

Approved By  
 HOD

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Sir M. Visvesvaraya Institute of Technology  
Bengaluru- 562 157  
TEST PAPER

TEST NO : II

SEMESTER : II

COURSE/BRANCH : MCA

MAX. MARKS : 40

SUBJECT : Object Oriented Programming  
using JAVA

DURATION : 90 Min.

SUBJECT : PCC  
CATEGORY(IPCC/PCC)FACULTY : VASANTHA S  
NAME

Instructions: Answer any one Question from each Part

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)  
CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
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**PART A**

1	a) Explain the multiple usages of final keyword with example.	10	CO2	L2	PO1	1.7.1
	b) How to call super class constructors and super class members using super? Demonstrate it.	10	CO2	L2	PO1	1.7.1

**OR**

2	a) Discuss briefly method overriding with suitable example and also mention the restrictions.	10	CO2	L2	PO1	1.7.1
	b) Illustrate with a suitable example multilevel inheritance.	10	CO2	L2	PO1	1.7.1

**PART B**

3	a) Write a java program for implementation of multiple inheritance using interface to calculate the area of a rectangle and triangle.	10	CO3	L3	PO2	2.8.1
	b) How to create single and hierarchy package? Illustrate with suitable program.	10	CO3	L2	PO1	1.7.1

**OR**

4	a) Write a JAVA program to i. Create a package named shape. ii. Create some classes in the package representing some common shapes like Square, Triangle, and Circle. iii. Import and compile these classes in other program	10	CO3	L3	PO2	2.8.1
	b) Exemplify Abstract class and interface.	10	CO3	L2	PO1	1.7.1

CO2: Illustrate the concepts of generalization and run time polymorphism applications to develop reusable components.

CO3: Demonstrate the usage of Packages, Interfaces and Abstract class in building given applications.

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Bangalore 562 157

## INTERNAL TEST PAPER

TEST NO : III

SEM : 2

COURSE /  
BRANCH : MCAMAX.  
MARKS : 40

DURATION : 90 Min

SUBJECT : Object Oriented Programming  
Using Java

Faculty Name : Vasantha S

## Instructions: Answer any one Question from each PART

BL - Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 - Applying, 4 - Analyzing, 5 - Evaluating, 6 - Creating)  
CO - Course Outcomes PO - Program Outcomes; PI - Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
<b>PART A</b>						
1	a) Discuss briefly five keywords to handle exception in java.	10	CO4	L2	PO1	1.7.1
	b) Describe the difference between throw and throws.	5	CO4	L2	PO1	1.7.1
	c) Write a program to illustrate Multi level try catch exception handling.	5	CO4	L3	PO2	2.8.1
<b>OR</b>						
2	a) How to create our own exception, illustrate with a suitable example.	10	CO4	L2	PO1	1.7.1
	b) Describe in detail checked and unchecked exception.	5	CO4	L2	PO1	1.7.1
	c) Write a program to illustrate Nested try catch exception handling.	5	CO4	L3	PO2	2.8.1
<b>PART B</b>						
3	a) With a neat diagram explain the life cycle of Applet.	10	CO5	L2	PO1	1.7.1
	b) Develop an applet to create a label, a text field and 4 check boxes with the caption "Red", "Green", "Blue" and "Yellow".	10	CO5	L4	PO2	2.8.1
<b>OR</b>						
4	a) Exemplify the following swing components with an example: i) JTextField ii) JButton iii) JComboBox iv) JLabel	10	CO5	L2	PO1	1.7.1
	b) Develop a swing applet to create a label, a text field and 4 check boxes with the caption "Red", "Green", "Blue" and "Yellow".	10	CO5	L4	PO2	2.8.1

CO4: Demonstrate the user defined exception by exception handling keywords  
(try, catch, throw, throws and finally)

CO5: Understand the Graphical User Interface design and implementation using Applet, AWT or swing.

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**Sir M. Visvesvaraya Institute of Technology**  
**Bangalore 562 157**  
**SCHEME AND SOLUTION**

TEST NO : 1 SEM : 2 COURSE / BRANCH : MCA MAX. MARKS : 40 DURATION : 90 Min  
 SUBJECT : Object Oriented Programming Faculty Name : Vasantha S  
 Using Java

**Instructions: Answer any one Question from each PART**

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)  
 CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
<b>PART A</b>						
1	a) Explain the features or buzzwords of java. Following are the buzzwords of java : simple,object oriented,Robust, concurrent, portable, Aritecture Neutral, platform independent, secure, distributed, compiled and interpreted. → each concept explanation carries 1 Mark = 1X 10 =10 Marks	10	CO1	L2	PO1	1.7.1
	b) Describe type casting, type conversion and automatic type promotion with a suitable example. Type casting : Forcefully converting the compatible type Example : byte b1=10,b2=20; byte b=(byte)(b1+b2); →Explanation with example carries 3 Marks Type conversion: Implicitly converting the compatible type Example: int a; byte b=20; a= b; →Explanation with example carries 3 Marks Type promotion: Automatically converting expression result value based on the largest type of variable available in the expression Example: int a=10; byte b=10;short s=10; float f=2.3f; float b = a+b+s+f; Rules: i. In an expression if the operands are byte,short or char automatically promoted to int. ii. In an expression if any one operand is long then entire expression is promoted to long iii. In an expression if any one operand is float then the entire expression is promoted to float. Iv. In an expression if any one operand is double then the entire expression is promoted to double. →Explanation, Rules with example carries 4 Marks →3+3+4 = 10 Marks	10	CO1	L2	PO1	1.7.1

**OR**

2	a) Explain the operations of the following operators with examples i) >>> ii) & iii) instanceof iv) >> i>>>: Right shift with zero fill operators are used to fill the left most bit with zero. Example a=8; a>>>2; → output will be 2 ii)& : Bitwise AND operator are used to perform the operation in terms of bit, the result will return true only if both the operand values are true. Example a=true ;b=true ; c=a&b → returns true iii)instanceof: instanceof operators are used to know whether the object is instance of a particular class or not.	10	CO1	L2	PO1	1.7.1
---	--	----	-----	----	-----	-------



Example Student instance of Person

iv) >> Right shift with zero fill operators are used to fill the left most bit with zero.

Example  $a=8$ ;  $a>>>2$ ; → output will be 2

⇒ Each explanation carries 2.5 Marks

⇒  $2.5 \times 4 = 10$  Marks

b) Describe the following constructs with examples.

i) Labeled break ii) Labeled continue

i) Labeled break: to come out from the inner most looping statement labeled break are used

example :

l:for()

{ for() { statement; if(condition) break l; } }

→ Explanation with example carries 5 Marks

ii) Labeled continue: to skip the certain parts of innermost loop and continue with the remaining iteration of outer loop then Labeled continue we have to use.

l:for()

{ for() { statement; if(condition) continue l; } }

→ Explanation with example carries 5 Marks

10 CO1 L2 PO1 1.7.1

### PART B

a) Describe briefly about the primitive data types in JAVA.

Primitive data types in JAVA are categorized into 4 groups

i. Integer group ii. Floating group iii. Character group iv. Boolean group

→ Explanation of Integer and Floating group carries 6 Marks and

Character and Boolean carries 4 Marks =  $6+4=10$  Marks

10 CO1 L2 PO1 1.7.1

b) Discuss with a suitable example String class any three character extraction methods.

Character extraction methods : i. charAt() ii. getChars()

iii. toCharArray() → each concept explanation with snippet code carries 2 Marks =  $2 \times 3 = 6$  Marks

6 CO1 L2 PO1 1.7.1

c) Write a java program to find area of the circle by accepting radius from user.

Scanner ob=new Scanner(System.in);

System.out.println("Enter radius");

Int r=ob.nextInt();

System.out.println("Area of Circle :"+(3.142\*r\*r));

→ Complete code carries 4 Marks

4 CO1 L3 PO2 2.8.1

### OR

a) Discuss with a suitable program constructor overloading and method overloading.

Constructor overloading: Constructor which is having same name but the parameter list are different.

Example :

Class A { A(){} A(int a,int b){} }

→ Explanation with example carries 5 Marks

Method overloading: Method which is having same name but the parameter list are different.

Class A { Void add(){} void add(int a,int b){} }

→ Explanation with example carries 5 Marks

10 CO1 L2 PO1 1.7.1

<p>b) Write a Short note on i) this ii) Garbage Collector</p> <p>i) bytecode : Highly optimized set of code can be understandable only by JVM. Bytecode makes java platform independent and provide security.</p> <p>ii) Unicode: character in java is 2 bytes and it is also called Unicode. Using Unicode it is possible to represent all human language character.</p> <p>ii) Garbage Collector: In java we are not worry about deallocating the object memory , whenever object is out of scope automatically Garbage Collector will be called to deallocate those memory</p> <p>→ each concept explanation carries 3 Marks = 3X2=6 Marks</p>	6	CO1	L2	PO1	1.7.1
<p>c) Write a java program to find circumference of the circle by accepting radius from user.</p> <pre>Scanner ob=new Scanner(System.in); System.out.println("Enter radius"); int r=ob.nextInt(); System.out.println("Circumference of Circle :"+(2*3.142*r));</pre> <p>→ Complete code carries 4 Marks</p>	4	CO1	L3	PO2	2.8.1

CO1: Understanding the basic concepts of object oriented Programming.

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Sir M. Visvesvaraya Institute of Technology  
Bangalore 562 157  
SCHEME AND SOLUTION

TEST NO : II

SEM : 2

COURSE /  
BRANCH : MCAMAX.  
MARKS : 40

DURATION : 90 Min

SUBJECT : Object Oriented Programming  
using JAVA

Faculty Name : Vasantha S

Instructions: Answer any one Question from each PART

BL - Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 - Applying, 4 - Analyzing, 5 - Evaluating, 6 - Creating)  
CO - Course Outcomes PO - Program Outcomes, PI - Performance Indicator

## Question

Marks

CO

BL

PO

PI

Q.No

## PART A

1	a) Explain the multiple usages of final keyword with example. → final keyword is used for three purpose i) to create constant → explanation with snippet code carries 3 Marks ii) to prevent method overriding → explanation with snippet code carries 4 Marks iii) to prevent inheritance → explanation with snippet code carries 3 Marks → 3+4+3= 10 Marks	10	CO2	L2	PO1	1.7.1
	b) How to call super class constructors and super class members using super? Demonstrate it. i) super class constructor: class A {A() {System.out.println("Super class");}} class B extends A {B() {super(); System.out.println("Subclass");}} ⇒ Complete code with explanation carries 5 Marks ii) Accessing super class member: class A { int x; A() {x=10;}} class B extends A { int x; B() {x=20; void display() {System.out.println("X="+x); System.out.println("Super class X="+super.x);}} ⇒ Complete code with explanation carries 5 Marks → 5+5=10 Marks	10	CO2	L2	PO1	1.7.1

## OR

2	a) Discuss briefly method overriding with suitable example and also mention the restrictions. class A { void display() {System.out.println("Display from A");}} class B extends A { void display() {System.out.println("Display from B");}} → display() method in the class B said to override the method of class A → complete code with explanation carries 8 Marks restriction: override method have the same type signature, override method must have more access modifier but not less. → carries 2 Marks → 8+2=10 Marks	10	CO2	L2	PO1	1.7.1
	b) Illustrate with a suitable example multilevel inheritance. class A {int a; A() {a=10;}} void getA() {System.out.println("A="+a);}} Class B extends A { int b; B() {b=10;}} void getB() {System.out.println("A="+b);}} → class B inherit property and methods of A ⇒ Complete code with explanation carries 10 Marks	10	CO2	L2	PO1	1.7.1

## PART B

3	a) Write a java program for implementation of multiple inheritance using interface to calculate the area of a rectangle and triangle.	10	CO3	L3	PO2	2.8.1
---	---	----	-----	----	-----	-------

<p>Interface Shape {void area();}</p> <p>Class Dimension</p> <pre>{ double w,double h; Dimension(double w,double h){this.w=w;this.h=h;}}</pre> <p>Class Rectangle extends Dimension implements Shape</p> <pre>{ Rectangle(double w,double h){super(w,h);} Void area(){System.out.println("Area of Rectangle = "+(w*h)); }→Complete code carries 10 Marks</pre>					
<p>b) Single level package creation:</p> <p>Create directory name mypack in D: drive say D:\javad\mypack&gt;</p> <p>Save the java source file and class file in the above directory.</p> <p>Syntax : package packagename;</p> <p>Example : package mypack;</p> <p>Program: Package mypack;</p> <pre>Class A { void display(){System.out.println("Display ");}} Class Main{public static void main(String arg[]){A ob=new A(); Ob.display();} Compile : D:\javad\mypack&gt;javac Main.java Running : D:\javad\mypack&gt;java mypack.Main Multilevel package creation: Syntax: package pk1[.pk2.]pk3.]pkn;</pre>	10	CO3	L2	PO1	1.7.1

OR

<p>a) Write a JAVA program to</p> <ol style="list-style-type: none"> <li>Create a package named shape.</li> <li>Create some classes in the package representing some common shapes like Square, Triangle, and Circle.</li> <li>Import and compile these classes in other program</li> </ol> <pre>package shape; → save file as Circle.java in a folder shape class Circle{void area(int r){System.out.println("Area of Circle = "+(3.142*r*r));}} import shape.*; class Main → save file as Main.java outside shape folder { Public static void main(String ar[]){ Circle ob=new Circle(); ob.area(5); } D:\shape&gt;javac *.java → compilation D:\shape&gt;cd.. D:\&gt;javac Main.java D:\&gt;java Main → Running package program</pre>	10	CO3	L3	PO2	2.8.1
<p>b) Exemplify Abstract class and interface.</p> <p>Abstract class : Abstract class contains instance variable, concrete methods and atleast one abstract method, abstract method must be specified by abstract keyword. Ex: abstract class A{void method1(){ abstract m2();}</p> <p>Interface: interface contains final and static variable, all the methods in interface are abstract must be implemented by concrete class.</p> <p>Ex: interface shape{ void area();}</p>	10	CO3	L2	PO1	1.7.1

CO2: Illustrate the concepts of generalization and run time polymorphism applications to develop reusable components.

CO3: Demonstrate the usage of Packages, Interfaces and Exceptions in building given applications.

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**Sir M. Visvesvaraya Institute of Technology**  
**Bangalore 562 157**  
**RETEST INTERNAL TEST PAPER**

TEST NO : 1 SEM : 2 COURSE / BRANCH : MCA MAX. MARKS : 40 DURATION : 90 Min  
 SUBJECT : Object Oriented Programming Faculty Name : Vasantha S  
 Using Java

**Instructions: Answer any one Question from each PART**

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 – Creating)  
 CO – Course Outcomes PO – Program Outcomes; PI – Performance Indicator

Q.No	Question	Marks	CO	BL	PO	PI
<b>PART A</b>						
1	a) Explain any five OOPs concepts in java.	10	CO1	L2	PO1	1.7.1
	b) Describe type casting, type conversion and automatic type promotion with a suitable example.	10	CO1	L2	PO1	1.7.1
<b>OR</b>						
2	a) Explain the operations of the following operators with examples i) && ii) & iii) instanceof iv)	10	CO1	L2	PO1	1.7.1
	b) Describe the following constructs with examples. i) Labeled break ii) Labeled continue	10	CO1	L2	PO1	1.7.1
<b>PART B</b>						
3	a) Describe briefly about the primitive data types in JAVA.	10	CO1	L2	PO1	1.7.1
	b) Discuss with a suitable example String class any three character extraction methods.	6	CO1	L2	PO1	1.7.1
	c) Write a java program to find area of the Triangle by accepting data from user.	4	CO1	L3	PO2	2.8.1
<b>OR</b>						
4	a) Discuss with a suitable program constructor overloading and method overloading.	10	CO1	L2	PO1	1.7.1
	b) Write a Short note on i)bytecode ii)Unicode ii)Garbage Collector	6	CO1	L2	PO1	1.7.1
	c) Write a java program to find circumference of the circle by accepting radius from user.	4	CO1	L3	PO2	2.8.1

**CO1:** Understanding the basic concepts of object oriented Programming.

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PROF & HEAD  
 MASTER OF COMPUTER APPLICATIONS  
 Sir M. Visvesvaraya Institute of Technology  
 Munasamraashahalli, Bangalore-562 157



# Sir M Visvesvaraya Institute of Technology

## Department of MCA

SUBJECT: Object Oriented Programming Using Java CODE : 22MCA22

SL.N o.	USN	STUDENT NAME	FINAL MARKS(50)	Student Signature
1	1MV23MC001	ABHISHEK A PAREKAR	33	
2	1MV23MC002	ABHISHEK KUMAR	42	
3	1MV23MC003	AJAY BG	35	
4	1MV23MC004	AMIT KUMAR	43	
5	1MV23MC005	AMURU MOTHEESH	32	
6	1MV23MC006	ANKITA	40	
7	1MV23MC007	ANKITHA V	40	
8	1MV23MC008	BALAJI K	31	
9	1MV23MC009	BHAVYA SRL.B.H.	39	
10	1MV23MC010	BRAJESH KUMAR	38	
11	1MV23MC011	BRAJESH KUMAR	41	
12	1MV23MC012	CHANDAN L	46	
13	1MV23MC013	CHANDAN .S	37	
14	1MV23MC014	CHANDANA ARAVIND PATIL	32	
15	1MV23MC015	DEEPIKA G	37	
16	1MV23MC016	DEEPIKA T S	35	
17	1MV23MC018	GAJENDRA S	36	
18	1MV23MC019	GIRAKA THARUN KUMAR	46	
19	1MV23MC020	HARISH GIRIYA GOUDA	36	
20	1MV23MC021	HARSH	34	
21	1MV23MC022	HARSHITHA B M	43	
22	1MV23MC023	K SAI TEJA	41	
23	1MV23MC025	KAVITHA M Y	34	
24	1MV23MC026	KAVYA C K	42	
25	1MV23MC027	KAVYA G P	48	
26	1MV23MC028	KOMALA M S	33	
27	1MV23MC029	MANASA A	46	

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## Department of MCA

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Sl.N o.	USN	STUDENT NAME	FINAL MARKS(50)	Student Signature
28	1MV23MC030	MEGHANA H N	38	
29	1MV23MC031	MEGHANA T M	44	
30	1MV23MC032	MONISHA A R	39	
31	1MV23MC033	NANDINI UMASHANKAR	38	
32	1MV23MC034	NIKITA	44	
33	1MV23MC035	PANDIKUNTA MANJU	37	
34	1MV23MC036	PUNITH KUMAR D N	46	
35	1MV23MC037	RAKSHA	44	
36	1MV23MC038	RAMNIVAS S	42	
37	1MV23MC039	SAGAR S	38	
38	1MV23MC040	SAHANA K NAIR	36	
39	1MV23MC041	SANJANA V	42	
40	1MV23MC042	SHILPA P	46	
41	1MV23MC043	SHREELAKSHMI K A	43	
42	1MV23MC044	SHREYA RAVISH NAYAK	49	
43	1MV23MC045	SINCHANA H S	43	
44	1MV23MC046	SOUVIK CHAKRABORTY	49	
45	1MV23MC047	SUPRIYA D KHORVI	49	
46	1MV23MC048	SUSHANTH D	40	
47	1MV23MC049	SUSHMA	42	
48	1MV23MC050	SUSHMITHA K M	44	
49	1MV23MC051	SUSHMITHA.M	41	
50	1MV23MC052	TEJAS SURESH DESHBHANDARI	41	
51	1MV23MC053	TEJASVI BADAMI	39	
52	1MV23MC054	VARSHA B	47	
53	1MV23MC055	YASHASWINI J	39	
54	1MV23MC056	YUVARAJ S	36	