Hall Ticket Number:

Code No. : 14164 (H) N/O

VASAVI COLLEGE OF ENGINEERING *(AUTONOMOUS)*, HYDERABAD

Accredited by NAAC with A++ Grade

B.E. IV-Semester Main & Backlog Examinations, July-2023

Introduction to Object Oriented Programming (OE-II)

Time: **3 hours** Max. Marks: **60**

*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Justify the following statement: "Java is a strongly typed language"	2	3	1	1
2.	Write the syntax of a class in java and declare a class to store the details of the student.	2	1	1	1
3.	Identify when does "ClassNotFoundException" Occurs.	2	3	2	1
4.	If a method is capable of causing an exception that it does not handle, identify which clause it must include in the method's declaration?	2	3	2	1
5.	List any 2 classes present in java.lang package.	2	1	3	1
6.	State any one difference between character and byte streams.	2	1	3	1
7.	List different methods present in MouseListener Interface.	2	1	4	1
8.	Write different constructors present in FlowLayout.	2	1	4	1
9.	Compare init() and paint() method?	2	2	5	1
10.	Specify the different ways in which the applet can be executed.	2	1	5	1
	Part-B (5 × 8 = 40 Marks)				
11. a)	What is the difference between Abstract class and interface?	4	3	1	2
b)	Write a Java program to create an abstract class Bank-Account with abstract methods deposit() and withdraw(). Create subclasses: Savings-Account and Current-Account that extend the Bank-Account class and implement the respective methods to handle deposits and withdrawals for each account type.				
12. a)	Illustrate the significance of throw and throws keywords along with an example.	4	2	2	1
b)	With the help of a program, demonstrate how to handle ArrayIndexOutOfBounds Exception in java.	4	3	2	2
13. a)	What are the two abstract classes present in Byte Stream Class? Explain them with an example.	3	2	3	1
b)	Write a Java program which reads a two text files "demo.txt" and "example.txt" file and concatenate these two files into a new file "final.txt" file.and displays its contents on the console. If the file is not present the program must handle the exception.	5	3	3	2

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12. a)	Solve the following LP problem by the Dual simplex method Minimize $Z = -5X_1 + 2X_2$ Subject to $2X_1 + X_2 \geq 6$ $3X_1 + 8X_2 \geq 7$ $X_1, X_2 \geq 0$,	6	3	2	4
b)	Write the differences between primal and dual.	2	2	2	4
13.	Obtain the optimum solution of the following transportation problem.	8	3	3	4

	D1	D2	D3	D4	Supply
S1	5	2	4	3	60
S2	6	4	9	5	60
S3	2	3	8	1	90
Demand	50	65	65	30	

(i) Determine an initial solution by VAM.
(ii) Obtain an optimal solution by MODI method.
The objective is to minimize the total cost of transportation.

14.	Find minimum of $f(x) = x^2+(54/x)$ in the interval(0,1) using Fibonacci method. Take n=6	8	3	4	4
15.	Use Univariate method to minimize $f(X_1,X_2)= 4X_1^2+3X_2^2-5X_1X_2-8X_1$ starting from (0,0).	8	4	4	4
16. a)	Use simplex method to solve the following problem. Max. $Z = 3X_1+2X_2 + 5x3$ Sub to $X_1+2X_2+X_3 \leq 430$ $3X_1+ 2X_2 \leq 460$ $X_1+4X_2 \leq 420$ $X_1, X_2, X_3 \geq 0$	4	2	5	4
b)	Obtain the dual of Min. $Z = 5X_1+3X_2$ Sub to $X_1+X_2 \leq 2$ $5X_1+ 2X_2 \leq 10$ $3X_1+ 8X_2 \leq 12$ $X_1, X_2 \geq 0$	4	2	1	4
17.	Answer any ***two*** of the following:				
a)	Explain degeneracy in a transportation problem and how to resolve it.	4	2	1	4
b)	Write the differences between Fibonacci and golden section method?	4	2	1	4
c)	What is unconstrained optimization technique?	4	1	3	4

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	30%
iii)	Blooms Taxonomy Level – 3 & 4	50%

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