

Enrolment No.



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PIMPRI CHINCHWAD EDUCATION TRUST  
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(Established under Govt. of Maharashtra Act No. V of 2023)



**SCHOOL OF ENGINEERING & TECHNOLOGY**

**Unit Test-II March-2026**

Date: 20/03/2026

Program:	SY B.Tech (AI&ML)	Batch :	2024-2028	Semester :	IV
Course Code & Name:	UBTMLOE207/OE- Digital Image Processing				
Maximum Marks:	20	Time:	1 Hr		

**Course Learning Outcomes:**

- Learn the basics and fundamentals of digital image processing, such as Digitization, sampling, quantization, and 2D-transforms
- Operate on images using the techniques of smoothing, sharpening and enhancement in spatial Domain
- Learn the basics of compression digital image and their different types
- Analyse the restoration concepts and filtering techniques
- Explore the basics of segmentation & features extraction techniques

**Instructions:**

- All questions are compulsory.
- Assume missing data suitably, if any.
- Draw well labeled diagrams wherever necessary

QUESTIONS		CLO	BTL	Marks
<b>Q.1 Attempt the following (Any 2)</b>		<b>Max Marks: 10 (2*5)</b>		
A	Define image compression. Explain the need for image compression in digital image processing applications.	CLO3	B2	05
B	Explain Run Length Coding (RLC) and solve the following example. 1) 012100010001110    2) AFAABBBCCCDAAA	CLO3	B3	05
C	Differentiate between the lossy compression and lossless compression	CLO3	B4	05
<b>Q.2 Attempt the following (Any 2)</b>		<b>Max Marks: 10 (2*5)</b>		
A	Define image segmentation. Explain the types of segmentation in digital image processing.	CLO4	B2	05
B	Explain Hough Transform and its application in line detection.	CLO4	B2	05
C	Apply High Pass Filter operator to the following 3x3 image. Find the gradient value at the center pixel  Input Image =	CLO4	B3	05

0	20	180	190	0
10	10	200	0	10
30	170	110	210	200
40	50	150	170	0
200	180	200	250	20



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 Pimpri Chinchwad University, Pimpri, Maharashtra

**SCHOOL OF ENGINEERING & TECHNOLOGY**

Program:	SY B.Tech (AI&ML)	Batch :	2024-2028	Semester :	IV	Date: 20/03/2026
Course Code & Name:	Applied Statistical Techniques (UBTML213)					
Maximum Marks:	20			Time:	1 Hr	
<b>Course Learning Outcomes:</b>						
<ol style="list-style-type: none"> <li>1. Identify the advanced terms in statistics.</li> <li>2. Explain the estimation &amp; its techniques.</li> <li>3. Apply knowledge of hypothesis techniques to test large and small samples.</li> <li>4. Apply non-parametric tests on practical situations.</li> <li>5. Analyze parametric and non-parametric inference.</li> </ol>						
<b>Instructions:</b>						
<ul style="list-style-type: none"> <li>- All questions are compulsory.</li> <li>- Assume missing data suitably, if any.</li> <li>- Draw well labeled diagrams wherever necessary</li> </ul>						

**QUESTIONS**

Q.1 Attempt the following (Any 2)		CLO	BTL	Marks
A	Explain ZTest and differentiate between Ttest and Ztest?			
		<b>Max Marks: 10 (2*5)</b>		
B	Two teaching methods are tested. Group A: Mean = 75, SD = 5, n = 10 Group B: Mean = 70, SD = 6, n = 10 Test at 5%.	CLO3	B2	05
C	A company claims that the average battery life of their new smartphone is 12 hours. A consumer group tests 100 phones and finds the average battery life to be 11.8 hours with a population standard deviation of 0.5 hours. At a 5% significance level, is there evidence to refute the company's claim?	CLO3	B3	05

**Q.2 Attempt the following (Any 2)**

Q.2 Attempt the following (Any 2)		Max Marks: 10 (2*5)		
A	Explain the Chi-Square test in detail.			
B	Eye colour in a sample of 40. Blue 12, brown 21, green 3, others 4. Eye colour in the population is Brown 80%, Blue 10%, Green 2%, Others 8%. Is there any difference between proportion of sample to that of population using $\alpha$ 0.05 applying Chi square test?	CLO4	B2	05
C	A psychologist wishes to test if preference of method of learning differs with gender. He asks a group of 146 individuals their preferred method of learning. Below is a table of the results. Perform a test at 5% significance level to see if a relationship exists.	CLO4	B3	05

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## SCHOOL OF ENGINEERING & TECHNOLOGY

### Unit Test-II March-2026

Date: 18/02/2026

<b>Program:</b>	SY B.Tech (AI&ML)	<b>Batch :</b>	2024-2028	<b>Semester :</b>	IV
<b>Course Code &amp; Name:</b>	Database Management System (UBTML208)				
<b>Maximum Marks:</b>	20		<b>Time:</b>	1 Hr	

**Course Learning Outcomes:**

1. An ability to design ER Model for any application
2. To Decompose any Schema by applying normal forms
3. To construct SQL queries for any requirement
4. To Understand the Query Evaluation and Execution processes
5. To write Trigger, Cursor, PL/SQL Programs and to design object oriented, extended relational schemas

**Instructions:**

- All questions are compulsory.
- Assume missing data suitably, if any.
- Draw well labeled diagrams wherever necessary

### QUESTIONS

	QUESTIONS	CLO	BTL	Marks
<b>Q.1 Attempt the following (Any 2)</b>		<b>Max Marks: 10 (2*5)</b>		
A	Classify the different types of SQL commands (DDL, DML, DCL, TCL) and illustrate their syntax with appropriate examples.	CLO3	B2	05
B	Consider the relation Employee(EID, EName, Dept, Salary, Age, City). Write SQL queries for the following requirements: a) Retrieve employees whose salary is greater than <u>any</u> employee working in the HR department. b) Retrieve employees whose salary is greater than all employees in the Marketing department. c) Retrieve employees whose city information is not specified (NULL). d) Display the distinct city names from the Employee table. e) Find the departments where the total salary exceeds 1,00,000.	CLO3	B3	05
C	Explain the different types of SQL joins and illustrate their usage with suitable examples.	CLO3	B2	05
<b>Q.2 Attempt the following (Any 2)</b>		<b>Max Marks: 10 (2*5)</b>		
A	Describe the different states of a transaction and illustrate the transaction state diagram.	CLO4	B2	05
B	Define the ACID properties of transaction management and explain the Shadow Copy Scheme used for ensuring database recovery.	CLO4	B2	05
C	Explain the implementation of isolation in transaction management and discuss the different isolation levels.	CLO4	B2	05

# SCHOOL OF ENGINEERING & TECHNOLOGY

## Unit Test-II March-2026

Date: 18 /03/2026

Name:	SY B.Tech (AI&ML)	Batch :	2024-2028	Semester :	IV
Code & Name:	UBTML210- Java Programming				
Num Marks:	20			Time:	1 Hr

**Learning Outcomes:**

- Grasp the fundamentals programming concepts of Java programming language
- Apply object-oriented principles like abstraction, encapsulation, inheritance, polymorphism in solving problems
- Perform exception handling, multithreading code using java
- Develop software applications using JDBC connectivity
- Design the Graphical User Interface using event handling

**Instructions:**

- All questions are compulsory.
- Assume missing data suitably, if any.
- Draw well labeled diagrams wherever necessary

QUESTIONS		CLO	BTL	Marks
<b>Attempt the following (Any 2)</b>		<b>Max Marks: 10 (2*5)</b>		
A	Differentiate between MultiThreading & MultiProcessing	CLO3	B1	05
B	Explain thread life cycle with appropriate diagram.	CLO3	B2	05
C	Write a java program to handle the ArithmeticException and ArrayIndexOutOfBoundsException	CLO3	B3	05
<b>2 Attempt the following (Any 2)</b>		<b>Max Marks: 10 (2*5)</b>		
A	What is collection? Explain the interfaces of the collections.	CLO4	B3	05
B	Develop a Java program using ArrayList to manage student records. Create a class Student with attributes id, name, and marks. Use an ArrayList to store multiple student objects and perform the following operations: 1. Add at least three student records. 2. Display all student details. Write the complete program and display the output.	CLO4	B3	05
C	Develop a Java program using HashSet to manage a collection of course names. Add at least five course names into a HashSet and perform the following operations: 1. Add all course names stored in the HashSet. 2. Display the course names Write the complete program and display the output.	CLO4	B2	05

\*\*\*\*\*All the Best\*\*\*\*\*