

Subject Code:- 

M	C	A-	201						
---	---	----	-----	--	--	--	--	--	--

Subject:- 

DAA
-----

Roll No:- 

--	--	--	--	--	--	--	--	--	--

**TECNIA INSTITUTE OF ADVANCED STUDIES****MCA****Class Test (2025-26)****Sem: I****Shift: M****Division: A****Set-2**Date: 

--	--	--	--	--	--	--	--

Time: -1:00 Hours

Max. Marks: 30

**General Instructions:**

- All Questions are compulsory. Answers should be brief and to the point.
- It comprises three sections, A, B, and C. you are to attempt all the sections.
- **Section A** – Question No -1 is Very Short Answers type carrying 2 marks each. You are required to answer ALL.
- **Section B**- Question No-3 is Short Answers type question carrying 5 marks each. You are required to attempt any TWO out of THREE questions given.
- **Section C**- Question No -4 is Long Answer type question carrying 10 marks each. You need to attempt any one.
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated /checked.

		CO	BT	M
	<b>SECTION –A</b>			<b>(10)</b>
<b>1.</b>	<b>Attempt All of the following.</b>			<b>(5*2=10)</b>
<b>a.</b>	What is the smallest value of n such that an algorithm whose running times is $100n^2$ runs faster than an algorithm whose running time is $2n$ on the same machine	<b>CO1</b>	<b>L1,L2</b>	
<b>b.</b>	Define the terms best case, worst case, and average case time complexity	<b>CO1</b>	<b>L1,L3</b>	
<b>c.</b>	Illustrate randomized algorithm with an example.	<b>CO1</b>	<b>L1,L3</b>	
<b>d.</b>	Differentiate between algorithm and program with help of an example.	<b>CO3</b>	<b>L1,L2,L3</b>	
<b>e.</b>	Elaborate the concept of merge sort algorithm.	<b>CO3</b>	<b>L1,L2,L3</b>	
	<b>SECTION –B</b>			
<b>2.</b>	<b>Answer any Two of the following.</b>			<b>(2*5=10)</b>
<b>a.</b>	Solve the recurrence $T(n) = 4T(n/2) + n^3$	<b>CO1</b>	<b>L2,L3</b>	
<b>b.</b>	Write an algorithm to merge 2 sorted arrays into a single sorted array.	<b>CO1</b>	<b>L1,L2</b>	
<b>c.</b>	Explain Divide and conquer strategy	<b>CO2</b>	<b>L1,L2,L3</b>	
	<b>SECTION –C</b>			
<b>3.</b>	<b>Answer any One of the following.</b>			<b>(1*10=10)</b>
<b>a.</b>	Solve the following recurrence using Master Theorem: 1. $T(n) = 3T(n/2) + n^2$ 2. $T(n) = 5T(n/6) + n^{1/3}$	<b>CO2</b>	<b>L1,L2,L3</b>	
<b>b.</b>	Compute the prefix function $\pi$ for the pattern ababbabbabbababbabb.	<b>CO3</b>	<b>L1,L2,L3</b>	

