

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**Diploma Engineering, Mid semester Examination**

**Semester:**  
**Subject Code: (0360657)**  
**Subject Name: (Algorithm)**

**Date: (dd/mm/yyyy)**  
**Time: (1hr: 30min)**  
**Total Marks: 40**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

<b>Q.1</b>	<b>Answer any six out of Ten. (2 Marks Each)</b>	<b>(12)</b>	<b>Co/Po Name</b>	<b>Blooms Taxonomy Words</b>
	1. Define Array and list types of it.		CO1	<b>Explicate</b>
	2. Briefly explain working of an array with syntax and example.		CO1	<b>Explicate</b>
	3. Define Pointer with syntax and example		CO1	<b>Explicate</b>
	4. Define Recursion. Also write down its applications.		CO1	<b>Explicate</b>
	5. Difference between stack and queue.		CO2	<b>Distinguish</b>
	6. Define the term 1) Time Complexity 2) Space Complexity.		CO2	<b>Explicate</b>
	7. What is recursion function? Explain with example.		CO1	<b>Explicate</b>
	8. Define Sets. Also list out Operations of sets.		CO1	<b>Explicate</b>
	9. Define the term Analysis with example.		CO2	<b>Explicate</b>
	10. What is algorithm?		CO1	<b>Explicate</b>
<b>Q.2</b>	A) What is stack? Write its application and write down algorithm for PUSH and POP.	<b>(03)</b>	CO2	<b>Draft</b>
	OR			
	A) Write a pseudo code for PUSH and POP algorithm.	<b>(03)</b>	CO2	<b>Draft</b>
	B) Given 2 multisets: P={a, a,a,b,d,d,e,e,e,e,e} Q={a,a,c,d,d,d,f} find apply UNION and INTERSECTION method.	<b>(03)</b>	CO1	<b>Evaluate</b>
	OR		CO2	
	B) Write down pseudo code for bubble sort and also write time complexity, space complexity of it.	<b>(03)</b>	CO3	<b>Evaluate</b>
	C) Apply Merge sort on given list: 36 25 40 2 7 80 15	<b>(04)</b>	CO3	<b>Execute</b>
	OR			
	C) Write a algorithm for selection sort and find time complexity for the same.	<b>(04)</b>	CO3	<b>Evaluate</b>
	D) What is string? List it's function and explain strlen () and strcmp () function with example.	<b>(04)</b>	CO2	<b>Analyze</b>
<b>Q.3</b>	A) What is Queue? Write its application and write down algorithm for ENQUEUE and DEQUEUE.	<b>(03)</b>	CO2	<b>Illustrate</b>
	OR			
	A) Apply Quick sort on given list: 9 7 5 11 12 2 14 3 10 6	<b>(03)</b>	CO3	<b>Perform</b>
	B) Write down implementation steps for Insertion sort with its example	<b>(03)</b>	CO3	<b>Calculate</b>
	OR			
	B) Write down pseudo code for selection sort and also write time complexity & space complexity of it.	<b>(03)</b>	CO3	<b>Elaborate</b>
	C) Given an array, a[0.....15][0.....10] with base value 2000 and the size of each element is 2 Byte in memory. Find the address of a[15][5] with the help of row-major representation.	<b>(04)</b>	CO2	<b>Calculate</b>
	OR			
	C) Given an array, a[0.....15][1.....10] with base value 1200 and the array contains elements of float data type. Find the address of a[0][10] with the help of column-major representation	<b>(04)</b>	CO2	<b>Calculate</b>
	D) Explain analysis of Merge sort in detail.	<b>(04)</b>	CO3	<b>Analysis</b>

