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STUDENT NAME		CLASS	New 1st Year (FSC/ICS)
PAPER CODE	59288	SUBJECT	Computer
TIME ALLOWED	40	TOTAL MARKS	25
Paper Date	06-02-2026	Paper Type	

Q1. **Choose the correct answer.** 5X1=5

1. What are the three essential parts of a computational problem?

(A) Variables, loops, conditionals   **(B)** Input, process, output   **(C)** Code, function, class   **(D)** Logic, loop, module

2. A scenario where Dynamic Programming proves most useful:

(A) Problems without overlapping subproblems   **(B)** Problems solved by making local choices   **(C)** Problems with overlapping subproblems and optimal substructure   **(D)** Problems divided into independent subproblems

3. What is Big O notation used for?

(A) Creating algorithms   **(B)** Measuring the output size   **(C)** Measuring time and space complexity   **(D)** Storing data

4. Which sorting algorithm is based on Divide and Conquer?

(A) Bubble Sort   **(B)** Selection Sort   **(C)** Merge Sort   **(D)** Insertion Sort

5. Time complexity of Depth-First Search (DFS) in a graph is:

(A) $O(n \log n)$ **(B)** $O(V)$ **(C)** $O(V + E)$ **(D)** $O(n)$

Q2. **Write short answers of the following questions.** 5X2=10

1 . What are the three steps in Divide and Conquer?

2 . Name an algorithm that uses Divide and Conquer.

3 . In which type of problems is Divide and Conquer most effective?

4 . What is Dynamic Programming used for?

5 . How does Linear Search work?

Q3. **Write detailed answers of the following questions.** 2X5=10

1 . Discuss the characteristics of search problems and compare the efficiency of Linear Search and Binary Search algorithm.

2 .
Discuss the differences between time complexity and space complexity. How do they impact the choice of an algorithm for a specific problem?