**Module-3 PT**

**1** The time complexity of an algorithm that processes each input element exactly once is denoted as:  
○ O(1)  
○ O(log n)  
○ O(n)  
○ O(n^2)

**2** In the Master Theorem, which case covers divide-and-conquer algorithms with balanced subproblems?  
○ Case 1  
○ Case 2  
○ Case 3  
○ None of the above

**3** What is the space complexity of an algorithm that uses a constant amount of extra memory?  
○ O(1)  
○ O(log n)  
○ O(n)  
○ O(n^2)

**4** Recurrence relation T(n) = T(n−1) + 1 belongs to which type of algorithm?  
○ Linear search  
○ Binary search  
○ MergeSort  
○ QuickSort

**5** Which notation represents an average-case bound for an algorithm's complexity?  
○ Big-T  
○ Big-O  
○ Big-Θ  
○ Big-Ω

**6** What does the notation "O" in Big-O represent?  
○ Best-case complexity  
○ Average complexity  
○ Worst-case complexity  
○ Lower bound

**7** Which type of complexity is most commonly analysed in algorithm design?  
○ Best-case  
○ Average-case  
○ Worst-case  
○ Constant-case

**8** The Master Theorem provides solutions for recurrence relations of what form?  
○ Linear  
○ Quadratic  
○ Divide-and-conquer  
○ Exponential

**9** The time complexity of an algorithm with O(n^2) complexity is denoted as:  
○ O(1)  
○ O(log n)  
○ O(n)  
○ O(n^2)

**10** Which notation provides an average-case bound for an algorithm's complexity?  
○ Big-T  
○ Big-O  
○ Big-Θ  
○ Big-Ω

**11** Recurrence relation T(n) = T(n/2) + n^2 belongs to which type of algorithm?  
○ Binary search  
○ QuickSort  
○ Linear search  
○ MergeSort

**12** What is the space complexity of an algorithm that stores a constant number of variables?  
○ O(1)  
○ O(log n)  
○ O(n)  
○ O(n^2)

**13** In the context of algorithm analysis, linear time complexity is denoted as:  
○ O(1)  
○ O(log n)  
○ O(n)  
○ O(n^2)

**14** The best-case time complexity is useful for analysing algorithms that:  
○ Always have the same runtime  
○ Have the fastest runtime  
○ Have variable runtimes  
○ None of the above

**15** Which factor does Big-T notation focus on in algorithm analysis?  
○ Best-case runtime  
○ Worst-case runtime  
○ Average-case runtime  
○ Exact bound