

24.6.25 SQL + Python Quiz

Duration:- 60 min

◆ Section A: Algorithm Basics

1. Which of the following problems is best suited for the Greedy approach?
 - a) 0/1 Knapsack
 - b) Matrix Chain Multiplication
 - c) Activity Selection Problem**
 - d) Longest Common Subsequence
 2. Which is NOT true about the Divide and Conquer technique?
 - a) Breaks problems into sub-problems
 - b) Merges sorted arrays
 - c) Suitable only for linear time solutions**
 - d) Used in Quick Sort
 3. Dynamic Programming is preferred over recursion when:
 - a) The problem is large
 - b) Overlapping sub-problems exist**
 - c) Greedy fails
 - d) Time is not a constraint
 4. Brute force technique is best characterized by:
 - a) Optimal substructure
 - b) Recursive backtracking
 - c) Exhaustive search**
 - d) Memoization
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◆ Section B: Data Structures Basics

5. Which data structure provides constant time access to elements by index?
 - a) Array**
 - b) Linked List
 - c) Stack
 - d) Queue
 6. Which of the following is not a LIFO structure?
 - a) Call Stack
 - b) Queue**
 - c) Stack
 - d) Recursion
 7. Which data structure allows insertion from one end and deletion from the other?
 - a) Stack
 - b) Queue**
 - c) Deque
 - d) Array
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◆ Section C: Sorting Techniques

8. Which of the following sorting algorithms has the best average-case performance?
- a) Bubble Sort
 - b) Insertion Sort
 - c) Merge Sort
 - d) Selection Sort
9. Quick sort fails to provide $O(n \log n)$ performance when:
- a) Array is already sorted
 - b) Median is chosen as pivot
 - c) Pivot is random
 - d) Array has duplicate values
10. Which sorting technique is based on the concept of "divide and merge"?
- a) Selection Sort
 - b) Merge Sort
 - c) Insertion Sort
 - d) Quick Sort
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◆ Section D: Searching Techniques

11. Binary search is applicable only when:
- a) Data is unsorted
 - b) Data is sorted
 - c) Data is in a stack
 - d) Data contains strings
12. The time complexity of linear search is:
- a) $O(\log n)$
 - b) $O(1)$
 - c) $O(n)$
 - d) $O(n^2)$
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◆ Section E: Tree Structures

13. Which of the following trees maintains a balanced height after every operation?
- a) Binary Tree
 - b) AVL Tree
 - c) BST
 - d) N-ary Tree
14. In-order traversal of a binary search tree results in:
- a) Random order
 - b) Sorted order
 - c) Post-order sequence
 - d) Descending order
15. What is the maximum number of children a node can have in a Binary Tree?
- a) 1
 - b) 2
 - c) 3
 - d) Unlimited
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◆ Section F: Agile and Scrum

16. Which of the following best describes Agile?

- a) Waterfall methodology
- b) A set of tools
- c) Iterative and incremental development
- d) Traditional project management

17. The Scrum Master is primarily responsible for:

- a) Managing the team's budget
- b) Coaching the team and removing impediments
- c) Writing code
- d) Assigning tasks to developers

18. TRELLO is mostly used for:

- a) Coding IDE
- b) Database Management
- c) Task Tracking and Collaboration
- d) Software Testing

19. Which SDLC model emphasizes detailed documentation and minimal client interaction?

- a) Spiral Model
- b) Agile Model
- c) Waterfall Model
- d) V-Model

◆ Section G: Bonus Mixed Concept

20. Which combination is best for solving the shortest path in a weighted graph with non-negative weights?

- a) Brute Force + DFS
- b) BFS + Memoization
- c) Greedy + Dijkstra's Algorithm
- d) Dynamic Programming + Quick Sort

Would you like this quiz in **Word or PDF format**, or do you want **answer keys** added too?

You said:

i want the quiz of 70 mcq questions

ChatGPT said:

Updated saved memory

Great! Below is a **70-question Advanced Level Multiple-Choice Quiz** based on your topics:

✅ Advanced Level MCQ Quiz (70 Questions)

Topics: Algorithm Basics, Data Structures, Sorting & Searching, Trees, Agile, Scrum, SQL (DML, Joins, Subqueries, Normalization), Python (Basics, Control Flow, OOP, Functions, Exception Handling)

◆ Section 1: Algorithm Basics (Q1–10)

1. Greedy algorithms work best when a problem exhibits:
 - a) Overlapping subproblems
 - b) Optimal substructure and greedy choice property**
 - c) Backtracking
 - d) Recursion
2. Which technique is most effective for problems like Fibonacci using memoization?
 - a) Divide and Conquer
 - b) Brute Force
 - c) Greedy
 - d) Dynamic Programming**
3. The divide and conquer approach is used in:
 - a) Bubble Sort
 - b) Selection Sort
 - c) Merge Sort**
 - d) Insertion Sort
4. Brute-force algorithm for pattern matching in text searches:
 - a) KMP Algorithm
 - b) Rabin-Karp
 - c) Naive Approach**
 - d) Boyer-Moore
5. Dynamic programming approach stores:
 - a) Entire input
 - b) Solutions to subproblems**
 - c) Output in trees
 - d) Search indexes
6. Which of the following problems is not suitable for greedy?
 - a) Huffman Coding
 - b) Fractional Knapsack
 - c) 0/1 Knapsack**
 - d) Prim's Algorithm
7. Divide and conquer recursively splits the problem into:
 - a) Single input
 - b) Sub-problems**
 - c) Non-recursive loops
 - d) Memory blocks
8. Dynamic Programming avoids:
 - a) Repeating subproblems**
 - b) Loop iterations
 - c) Base case solutions
 - d) Recursive steps
9. Which strategy tries all possibilities?
 - a) Dynamic
 - b) Greedy
 - c) Divide and Conquer
 - d) Brute Force**
10. Time complexity of Fibonacci using DP (bottom-up)?
 - a) $O(n^2)$
 - b) $O(\log n)$

- c) $O(n)$
 - d) $O(2^n)$
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◆ **Section 2: Data Structures (Q11–20)**

11. Which structure uses LIFO?
 - a) Queue
 - b) Array
 - c) **Stack**
 - d) Linked List
12. Linked lists are preferred over arrays when:
 - a) Random access is needed
 - b) Memory is limited
 - c) **Frequent insertions/deletions occur**
 - d) Fixed size is needed
13. Which data structure allows insertion from both ends?
 - a) Queue
 - b) Stack
 - c) **Deque**
 - d) List
14. Which is best for recursion call tracking?
 - a) Queue
 - b) **Stack**
 - c) Tree
 - d) Heap
15. Arrays have time complexity $O(1)$ for:
 - a) Insertion
 - b) Deletion
 - c) **Indexing**
 - d) Searching
16. Queue follows:
 - a) LIFO
 - b) FILO
 - c) **FIFO**
 - d) Circular logic
17. To implement undo in an app, use:
 - a) Array
 - b) Queue
 - c) **Stack**
 - d) Graph
18. Linked list traversal time complexity:
 - a) $O(1)$
 - b) **$O(n)$**
 - c) $O(\log n)$
 - d) $O(n \log n)$
19. Which structure is linear?
 - a) Tree
 - b) Graph

c) Array

d) Heap

20. Which supports priority element retrieval?

a) Queue

b) Stack

c) Priority Queue

d) Linked List

◆ **Section 3: Sorting & Searching (Q21–30)**

21. Best case for Bubble Sort?

a) $O(n)$

b) $O(n \log n)$

c) $O(n^2)$

d) $O(\log n)$

22. Which sort is non-comparative?

a) Selection

b) Radix

c) Merge

d) Quick

23. Binary search requires:

a) Hash table

b) Sorted array

c) Unsorted array

d) Tree

24. Which search method is linear?

a) Binary

b) Hash

c) Linear

d) B-tree

25. Quick sort worst case occurs when:

a) Elements are random

b) All elements are same

c) Already sorted

d) All options

26. Merge Sort space complexity:

a) $O(1)$

b) $O(n)$

c) $O(\log n)$

d) $O(n \log n)$

27. Selection sort compares elements to:

a) First

b) Middle

c) Minimum

d) Last

28. Quick sort is:

a) Stable

b) In-place

- c) Iterative only
 - d) Heap-based
29. Which has worst case $O(n^2)$?
- a) Merge
 - b) Quick
 - c) Bubble**
 - d) Radix
30. Which is not a comparison-based sort?
- a) Merge
 - b) Radix**
 - c) Selection
 - d) Heap
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◆ **Section 4: Trees (Q31–40)**

31. Full binary tree has:
- a) All nodes with two children**
 - b) All nodes with one child
 - c) Root only
 - d) Leaves only
32. AVL Tree ensures:
- a) Sorted data
 - b) Duplicate entries
 - c) Balanced height**
 - d) No children
33. BST right child always:
- a) Smaller
 - b) Greater**
 - c) Equal
 - d) Random
34. Pre-order traversal visits in order:
- a) Left, Root, Right
 - b) Root, Left, Right**
 - c) Left, Right, Root
 - d) Root, Right, Left
35. Which tree allows self-balancing?
- a) BST
 - b) AVL**
 - c) Binary
 - d) Threaded
36. In a tree, level order traversal uses:
- a) Stack
 - b) Queue**
 - c) Recursion
 - d) Array
37. Height of a tree with one node:
- a) 0**
 - b) 1

- c) -1
- d) Undefined

38. Inorder traversal of BST gives:

- a) Pre-order
- b) Reverse
- c) Sorted list**
- d) None

39. A complete binary tree is:

- a) All nodes filled**
- b) Height-balanced
- c) All leaves equal level
- d) Any binary tree

40. Number of null links in a binary tree with n nodes:

- a) n
 - b) n-1
 - c) n+1
 - d) 2n**
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◆ Section 5: Agile & Scrum (Q41–50)

41. Agile delivers:

- a) Final product only
- b) Early and continuous delivery**
- c) Strict documentation
- d) Delayed updates

42. SDLC stands for:

- a) System Defined Life Cycle
- b) Software Design Life Cycle
- c) Software Development Life Cycle**
- d) Software Debug Life Cycle

43. Agile promotes:

- a) Heavy documentation
- b) End delivery
- c) Iterative delivery**
- d) Zero customer interaction

44. Scrum roles include:

- a) Product Owner, Tester
- b) Developer, Scrum Master, Product Owner**
- c) DBA, UX
- d) CEO

45. TRELLO is used for:

- a) Writing Python code
- b) Project collaboration**
- c) Database query
- d) Test automation

46. Traditional model SDLC is:

- a) Agile
- b) Waterfall**

- c) Spiral
- d) Scrum

47. Stand-up meetings in Scrum are:

- a) Daily**
- b) Weekly
- c) Monthly
- d) Annually

48. Which is an Agile methodology?

- a) Waterfall
- b) V-Model
- c) Scrum**
- d) Spiral

49. Sprint duration is usually:

- a) 1 day
- b) 1-4 weeks**
- c) 1 month
- d) 2 months

50. Product backlog is maintained by:

- a) Scrum Master
- b) Product Owner**
- c) Developer
- d) Tester

◆ **Section 6: SQL + Python + OOP (Q51–70)**

51. SQL JOIN that returns only matching rows:

- a) LEFT JOIN
- b) FULL JOIN
- c) INNER JOIN**
- d) CROSS JOIN

52. 2NF removes:

- a) Transitive dependency
- b) Partial dependency**
- c) Multivalued dependency
- d) Redundancy

53. DROP TABLE removes:

- a) Rows only
- b) Structure only
- c) Rows + Structure**
- d) Indexes only

54. Which clause is used for filtering?

- a) GROUP BY
- b) SELECT
- c) WHERE**
- d) HAVING

55. Python default function arguments must:

- a) Come first
- b) Be last**

- c) Be global
- d) Be required

56. lambda in Python is used for:

- a) Looping
- b) Recursion
- c) Anonymous function**
- d) Decorators

57. Which keyword raises exceptions in Python?

- a) throw
- b) raise**
- c) error
- d) except

58. Which is a Python set method?

- a) pop()
- b) get()
- c) discard()**
- d) append()

59. OOP access specifier for private variable:

- a) _var
- b) __var**
- c) public
- d) global

60. Polymorphism allows:

- a) Multiple classes
- b) Same function name, different behavior**
- c) No inheritance
- d) One object per class

61. Self in Python represents:

- a) A class
- b) A method
- c) The current object**
- d) Global variable

62. Which file mode in Python opens a file for reading only?

- a) w
- b) a
- c) r**
- d) x

63. Which SQL keyword ensures non-null values?

- a) CHECK
- b) NOT NULL**
- c) UNIQUE
- d) DEFAULT

64. Which SQL clause is used to group rows?

- a) HAVING
- b) GROUP BY**
- c) ORDER BY
- d) SELECT

65. Function to fetch all rows in Python SQL query:

- a) **fetchall()**
- b) fetchone()
- c) selectall()
- d) get()

66. What is the output of `type([])` in Python?

- a) tuple
- b) **list**
- c) dict
- d) set

67. `import *` is used to:

- a) Import selected items
- b) **Import all public names**
- c) Import nothing
- d) Import private functions

68. Python file object's `read()` method returns:

- a) dict
- b) list
- c) **string**
- d) int

69. SQL function to return current date:

- a) GETDATE()
- b) SYSDATE()
- c) **CURDATE()**
- d) NOW()

70. Python exception for invalid index:

- a) TypeError
- b) **IndexError**
- c) NameError
- d) ValueError