1. **What is the main goal of a greedy algorithm?  
   A. Explore all possibilities  
   B. Divide and merge solutions  
   C. Make the best local choice  
   D. Backtrack when needed**
2. **In dynamic programming, which concept is essential?  
   A. Recursion without memory  
   B. Memoization  
   C. Local decision making  
   D. Exhaustive search**
3. **Which algorithm breaks a problem into subproblems and combines solutions?  
   A. Greedy  
   B. Brute Force  
   C. Divide and Conquer  
   D. Hill Climbing**
4. **Which algorithm checks all possible solutions to find the best?  
   A. Brute Force  
   B. Greedy  
   C. Dynamic Programming  
   D. Backtracking**
5. **What data structure follows the LIFO principle?  
   A. Queue  
   B. Array  
   C. Stack  
   D. Tree**
6. **Which of the following is not a linear data structure?  
   A. Stack  
   B. Queue  
   C. Linked List  
   D. Tree**
7. **Which of these supports FIFO order?  
   A. Stack  
   B. Queue  
   C. Graph  
   D. Heap**
8. **Which data structure is used for recursion?  
   A. Queue  
   B. Tree  
   C. Stack  
   D. Graph**
9. **What is the time complexity of Bubble Sort in the worst case?  
   A. O(n log n)  
   B. O(n)  
   C. O(n²)  
   D. O(log n)**
10. **Which sorting algorithm is based on divide and conquer?  
    A. Selection Sort  
    B. Merge Sort  
    C. Insertion Sort  
    D. Bubble Sort**
11. **Which sorting technique selects the minimum and places it at the beginning?  
    A. Merge Sort  
    B. Insertion Sort  
    C. Selection Sort  
    D. Quick Sort**
12. **Which of the following sorting algorithms is not stable?  
    A. Bubble Sort  
    B. Insertion Sort  
    C. Merge Sort  
    D. Quick Sort**
13. **Which search algorithm checks every element one by one?  
    A. Binary Search  
    B. Linear Search  
    C. Depth First Search  
    D. Jump Search**
14. **Which search algorithm requires a sorted array?  
    A. Linear Search  
    B. Binary Search  
    C. BFS  
    D. DFS**
15. **What is the time complexity of Binary Search?  
    A. O(n)  
    B. O(n log n)  
    C. O(log n)  
    D. O(1)**
16. **What kind of tree keeps itself balanced with rotations?  
    A. Binary Tree  
    B. AVL Tree  
    C. Trie  
    D. B-Tree**
17. **In a binary tree, each node can have at most:  
    A. One child  
    B. Two children  
    C. Three children  
    D. Any number of children**
18. **What is the traversal order of Inorder traversal?  
    A. Root → Left → Right  
    B. Left → Right → Root  
    C. Left → Root → Right  
    D. Right → Root → Left**
19. **Which tree traversal visits nodes level by level?  
    A. Preorder  
    B. Inorder  
    C. Postorder  
    D. Level Order**
20. **What is the worst-case height of an AVL tree?  
    A. O(n)  
    B. O(log n)  
    C. O(1)  
    D. O(n log n)**
21. **What is the main goal of Agile methodology?  
    A. Create detailed documentation  
    B. Deliver working software quickly  
    C. Avoid customer interaction  
    D. Use waterfall model**
22. **Which of the following is not a value of Agile?  
    A. Working software over documentation  
    B. Customer collaboration over contract negotiation  
    C. Following a strict plan  
    D. Responding to change over following a plan**
23. **In Agile, how often should teams deliver working software?  
    A. Yearly  
    B. Monthly  
    C. Frequently, from a couple of weeks to a couple of months  
    D. Only at project end**
24. **What does SDLC stand for?  
    A. Software Defined Lifecycle  
    B. Software Development Life Cycle  
    C. System Design Logic Code  
    D. Systematic Development Life Cycle**
25. **Which of these is not a phase of the traditional SDLC?  
    A. Requirement Gathering  
    B. Design  
    C. Sprint Planning  
    D. Maintenance**
26. **Which SDLC model is also known as the linear sequential model?  
    A. Spiral  
    B. Agile  
    C. Waterfall  
    D. RAD**
27. **In Waterfall model, testing is done:  
    A. After coding  
    B. Before planning  
    C. Simultaneously with coding  
    D. During requirement gathering**
28. **The RAD model is best suited for:  
    A. Long-term projects  
    B. Mission-critical systems  
    C. Small and quick projects  
    D. Systems requiring high security**
29. **What is the core unit of work in Scrum?  
    A. Epic  
    B. Task  
    C. User Story  
    D. Sprint**
30. **What is a Sprint in Scrum?  
    A. A planning phase  
    B. A review meeting  
    C. A fixed period to deliver working product  
    D. A list of bugs to fix**
31. **What is the maximum duration of a Scrum Sprint?  
    A. 2 months  
    B. 1 month  
    C. 6 weeks  
    D. 3 months**
32. **Who is responsible for removing impediments in Scrum?  
    A. Product Owner  
    B. Scrum Master  
    C. Team Lead  
    D. Project Manager**
33. **Which of the following is not a Scrum role?  
    A. Product Owner  
    B. Scrum Master  
    C. Sprint Coach  
    D. Development Team**
34. **What is the outcome of a Sprint?  
    A. A documented report  
    B. A product backlog  
    C. A potentially shippable product increment  
    D. A codebase without bugs**
35. **What tool is commonly used for managing tasks in Agile projects?  
    A. Gantt Chart  
    B. MS Paint  
    C. TRELLO  
    D. Task Manager**
36. **In Scrum, the Product Backlog is owned by:  
    A. Scrum Master  
    B. Development Team  
    C. Product Owner  
    D. Stakeholder**
37. **What meeting helps the team reflect on their process after a Sprint?  
    A. Daily Standup  
    B. Sprint Planning  
    C. Sprint Review  
    D. Sprint Retrospective**
38. **What is the main purpose of the Daily Scrum?  
    A. Review design  
    B. Create product backlog  
    C. Plan for the next sprint  
    D. Share daily updates and identify blockers**
39. **Which Scrum artifact provides a list of all features, functions, and fixes?  
    A. Sprint Backlog  
    B. Product Backlog  
    C. Burn-down Chart  
    D. Impediment Log**
40. **In Agile, working software is the:  
    A. Final delivery only  
    B. Primary measure of progress  
    C. Last priority  
    D. Test report output**
41. **What does SQL stand for?  
    A. Structured Query Language  
    B. Simple Query Language  
    C. Secure Query List  
    D. Standard Queue Language**
42. **Which of the following is a NoSQL database?  
    A. Oracle  
    B. MongoDB  
    C. MySQL  
    D. SQL Server**
43. **What is the purpose of normalization in databases?  
    A. Increase redundancy  
    B. Speed up queries  
    C. Eliminate data redundancy and improve integrity  
    D. Increase data storage**
44. **Which normal form removes partial dependencies?  
    A. 1NF  
    B. 2NF  
    C. 3NF  
    D. BCNF**
45. **A table is in 1NF if:  
    A. It has composite keys  
    B. All entries are atomic  
    C. It has transitive dependencies  
    D. Foreign keys are removed**
46. **Which normal form addresses transitive dependencies?  
    A. 1NF  
    B. 2NF  
    C. 3NF  
    D. 4NF**
47. **In SQL Server, which system database stores all login information?  
    A. model  
    B. tempdb  
    C. master  
    D. msdb**
48. **Which of the following is used to create a new table?  
    A. INSERT  
    B. CREATE  
    C. SELECT  
    D. ALTER**
49. **Which command is used to remove a table permanently?  
    A. DELETE  
    B. REMOVE  
    C. DROP  
    D. TRUNCATE**
50. **Which of these is a DML statement?  
    A. CREATE  
    B. DROP  
    C. SELECT  
    D. ALTER**
51. **Which command is used to update a value in a table?  
    A. MODIFY  
    B. UPDATE  
    C. INSERT  
    D. CHANGE**
52. **To retrieve records where a column starts with "A", which clause is used?  
    A. WHERE name = 'A'  
    B. WHERE name LIKE 'A%'  
    C. WHERE name IN 'A'  
    D. WHERE name STARTS 'A'**
53. **What does the DISTINCT keyword do?  
    A. Removes columns  
    B. Filters nulls  
    C. Removes duplicate values  
    D. Renames columns**
54. **Which function is used to find the total number of rows?  
    A. SUM()  
    B. COUNT()  
    C. MAX()  
    D. LENGTH()**
55. **What is the use of the BETWEEN operator?  
    A. Check for duplicates  
    B. Specify a range  
    C. Join tables  
    D. Split values**
56. **Which clause groups rows that have the same values?  
    A. ORDER BY  
    B. GROUP BY  
    C. WHERE  
    D. LIMIT**
57. **Which aggregate function gives the largest value?  
    A. COUNT()  
    B. MIN()  
    C. MAX()  
    D. SUM()**
58. **What kind of JOIN returns only matching rows from both tables?  
    A. LEFT JOIN  
    B. RIGHT JOIN  
    C. INNER JOIN  
    D. FULL OUTER JOIN**
59. **Which type of JOIN includes all rows from both tables?  
    A. INNER JOIN  
    B. LEFT JOIN  
    C. FULL OUTER JOIN  
    D. RIGHT JOIN**
60. **What does a self join do?  
    A. Joins two tables  
    B. Joins a table with itself  
    C. Joins two unrelated tables  
    D. Joins with a backup table**
61. **What is the correct file extension for Python files?  
    A. .pyth  
    B. .pt  
    C. .py  
    D. .python**
62. **Which of the following is a valid variable name in Python?  
    A. 2value  
    B. value\_2  
    C. value-2  
    D. value 2**
63. **What is the output of: type(3.5)?  
    A. <class 'int'>  
    B. <class 'float'>  
    C. <class 'str'>  
    D. <class 'complex'>**
64. **Which of these is a keyword in Python?  
    A. function  
    B. define  
    C. def  
    D. fun**
65. **What will print(2 \*\* 3) output?  
    A. 6  
    B. 8  
    C. 9  
    D. 5**
66. **Which Python operator is used for floor division?  
    A. /  
    B. //  
    C. %  
    D. \*\***
67. **What does the input() function do in Python?  
    A. Outputs text  
    B. Reads user input as a number  
    C. Reads user input as a string  
    D. Terminates program**
68. **Which loop runs at least once, even if the condition is false?  
    A. while  
    B. for  
    C. do-while (not in Python)  
    D. None of these**
69. **How do you write a single-line comment in Python?  
    A. <!-- comment -->  
    B. /\* comment \*/  
    C. # comment  
    D. -- comment**
70. **Which statement is used to exit a loop prematurely?  
    A. continue  
    B. stop  
    C. exit  
    D. break**
71. **What will the following code print?**

**python**

**x = [1, 2, 3]**

**print(x[1])**

**A. 1  
B. 2  
C. 3  
D. Error**

1. **How do you define a function in Python?  
   A. function myFunc():  
   B. def myFunc():  
   C. define myFunc():  
   D. func myFunc():**
2. **Which keyword is used to return a value from a function?  
   A. output  
   B. yield  
   C. return  
   D. end**
3. **What is a lambda function?  
   A. A recursive function  
   B. A named function  
   C. An anonymous function  
   D. A nested loop**
4. **What is the correct way to create an object in Python?  
   A. obj = ClassName()  
   B. obj = new ClassName()  
   C. ClassName obj = new ClassName()  
   D. obj(ClassName)**
5. **What does the \_\_init\_\_ method do in Python classes?  
   A. Deletes an object  
   B. Initializes the object  
   C. Calls a method  
   D. Creates a loop**
6. **What type of method is not bound to class or instance?  
   A. instance method  
   B. static method  
   C. class method  
   D. magic method**
7. **What is inheritance in Python?  
   A. Repeating a function  
   B. Passing variables  
   C. Deriving a new class from an existing one  
   D. Looping through data**
8. **Which concept allows same function name with different functionality in different classes?  
   A. Abstraction  
   B. Inheritance  
   C. Encapsulation  
   D. Polymorphism**
9. **What is method overriding?  
   A. Writing methods outside the class  
   B. Redefining a method in the parent class  
   C. Defining two methods with the same name in a class  
   D. Changing the name of a method**
10. **Which function is used to open a file in Python?  
    A. read()  
    B. write()  
    C. open()  
    D. file()**
11. **What is the default mode for the open() function in Python?  
    A. 'w'  
    B. 'a'  
    C. 'r'  
    D. 'x'**
12. **Which mode is used to write to a binary file?  
    A. 'wb'  
    B. 'rb'  
    C. 'br'  
    D. 'bw'**
13. **How can you read an entire file content in Python?  
    A. readall()  
    B. get()  
    C. read()  
    D. readline()**
14. **What keyword is used to handle exceptions in Python?  
    A. throw  
    B. catch  
    C. except  
    D. fail**
15. **Which keyword is used to raise an exception manually?  
    A. throw  
    B. raise  
    C. fail  
    D. exit**
16. **What is a module in Python?  
    A. A type of loop  
    B. A set of related variables  
    C. A file containing Python code  
    D. A function with parameters**
17. **Which keyword is used to import a module?  
    A. import  
    B. use  
    C. load  
    D. include**
18. **What does PEP 8 relate to?  
    A. Database structure  
    B. Web development  
    C. Python code style  
    D. JavaScript optimization**
19. **Which command initializes a Git repository?  
    A. git create  
    B. git start  
    C. git init  
    D. git open**
20. **Which command stages files for a commit in Git?  
    A. git stage  
    B. git add  
    C. git commit  
    D. git save**
21. **What is a test suite in PyUnit?  
    A. A GUI framework  
    B. A collection of test cases  
    C. A type of Python package  
    D. An exception class**
22. **Which statement is used to assert equality in PyUnit?  
    A. assert.equal()  
    B. assertSame()  
    C. assertEqual()  
    D. assertCheck()**
23. **What is the use of fixtures in PyUnit?  
    A. Create databases  
    B. Execute only one test  
    C. Set up preconditions for tests  
    D. Handle exceptions**
24. **Which one is a valid JavaScript variable name?  
    A. var-1  
    B. 1var  
    C. \_var  
    D. var@name**
25. **How do you define a function in JavaScript?  
    A. function myFunc() {}  
    B. def myFunc():  
    C. func myFunc() {}  
    D. function:myFunc {}**
26. **Which operator is used for strict equality in JavaScript?  
    A. =  
    B. ==  
    C. ===  
    D. =>**
27. **What does alert() do in JavaScript?  
    A. Sends an email  
    B. Logs to console  
    C. Displays a popup box  
    D. Adds a delay**
28. **Which of the following is *not* a type of cloud model?  
    A. Public  
    B. Private  
    C. Local  
    D. Hybrid**
29. **Which AWS service provides virtual servers?  
    A. S3  
    B. EC2  
    C. Lambda  
    D. CloudFront**