FRONT END AND DATABASE

1- What does the CSS property "box-shadow" allow you to do?
A) Add a shadow to the entire page
B) Apply a shadow effect to text
C) Create a shadow behind an element's box
D) Change the shape of an element

2- Which jQuery method is used to add new HTML content to an element?
A) append()
B) create()
C) add()
D) insert()

3- What does the CSS property "float" do?
A) Makes text bold
B) Removes an element from the flow of the document
C) Adds shadows to text
D) Centers an element horizontally

4- What does the jQuery method ".hide()" do?
A) Removes an element from the DOM
B) Hides an element by changing its display property to "none"
C) Makes an element's background color transparent
D) Deletes the element's content

5- What does the HTML <meta> tag define?
A) Metadata about the HTML document
B) Hyperlinks to other documents
C) Document headings
D) Document structure

6- What is the purpose of jQuery's $.ajax() method?
A) To add a new HTML element to the DOM
B) To create animations
C) To make asynchronous HTTP requests
D) To select HTML elements by class

7- How can you center align an element horizontally in CSS without knowing its width?
A) Use the text-align: center; property
B) Use the margin: auto; property
C) Use the position: absolute; property
D) Use the display: inline-block; property
8-Which HTML5 element is used for semantic grouping of navigation links?
A) <nav>
B)
C) <section>
D)
9- Which attribute is used to specify an image to be shown while the video is downloading, or until the user hits the play button?
A) preload
B) placeholder
C) preview
D) poster
10- Which HTML5 storage mechanism is used for storing data that persists even after the browser is closed and reopened?
A) Cookies
B) Local Storage
C) Session Storage
D) Cache
11-What is the purpose of the SQL aggregate function COUNT()?
A) To calculate the total number of rows in a table
B) To calculate the average of numeric values in a column
C) To count the distinct values in a column
D) To retrieve the highest value in a column
12- Which SQL command is used to make a temporary copy of the records from one or more tables?
A) CLONE
B) COPY
C) SELECT INTO
D) EXPORT
13- Which SQL keyword is used to retrieve data from multiple tables based on a related column between them?
A) MATCH
B) LINK
C) JOIN
D) UNION

14- Which type of relationship enforces referential integrity in a relational database?
A) One-to-One
B) One-to-Many
C) Many-to-Many
D) None of the above

15- What is the primary purpose of a DBMS?
A) To design web applications
B) To manage hardware components
C) To manage and organise data in a database
D) To create computer networks
16- What is the result of the SQL expression "NULL = NULL"?
A) True
B) False
C) Unknown
D) Depends on the database system

17- What is the purpose of a foreign key in a relational database?
A) To ensure that a column has unique values
B) To enforce referential integrity between two tables
C) To define the primary key of a table
D) To store encrypted data

18- Which normal form ensures that non-prime attributes are functionally dependent on the primary key?
A) First Normal Form (1NF)
B) Second Normal Form (2NF)
C) Third Normal Form (3NF)
D) Fourth Normal Form (4NF)

19- What SQL clause is used to create an alias for a table or a column?
A) AS
B) ALIAS
C) RENAME
D) LABEL

20- What SQL command is used to grant specific privileges to a user or a role in a database?
A) PERMIT
B) ALLOW

C) GRANT
D) ACCESS

21- Which SQL statement is used to retrieve data from multiple tables using a single query?
A) JOIN
B) UNION
C) MERGE
D) GROUP BY

22-What does the SQL term "ACID" stand for in the context of database transactions?
A) Atomicity, Consistency, Isolation, Durability
B) Association, Concurrency, Inheritance, Deployment
C) Aggregate, Constraint, Index, Dependency
D) Authorization, Configuration, Initialization, Deployment

23- In SQL, which type of join returns only the common rows between two tables?
A) INNER JOIN
B) LEFT JOIN
C) RIGHT JOIN
D) FULL OUTER JOIN

24-What SQL clause is used to add or modify data in a database table?
A) SELECT
B) WHERE
C) INSERT INTO
D) HAVING

25-Which SQL function is used to find the maximum value within a column?
A) AVG()
B) SUM()
C) MAX()
D) MIN()

26- Which HTML tag is used to create a hyperlink in a webpage?
A. <link>
B. <href>

C. <a>
D. <url>

27- In CSS, what property is used to set the background color of an element?
A. background-color
B. color-background
C. bgcolor
D. background

28- What is the purpose of the jQuery function $() in jQuery?
A. To select elements in the DOM.
B. To create a new variable.
C. To define a new function.
D. To include an external library.

29- Which HTML tag is used to define an unordered list?
A.
B.
C.
D. <list>

30- What does the CSS property display: none; do?
A. Hides the element without affecting the layout.
B. Removes the element from the DOM.
C. Changes the element's text color to white.
D. Makes the element transparent.

PYTHON

1- What will be the output of the following code snippet?
print(2**3 + (5 + 6)**(1 + 1))
a)126
b)28
c)129
d)None of the above.

2- What will be the datatype of the var in the below code snippet?
var = ‘100’
print(type(var))
var = "Hello"

print(type(var))
a)str and int
b)int and int
c)int and str
d)str and str

3- num = 203
result = (num%10)* "ABC"
print(result)

A) "ABCABCABC"
B) "3ABC"
C) 20 times “ABC”
D) TypeError

4- Which of the following is a valid way to check if two lists are equal in terms of both values and order?
A) list1 is list2
B) list1 == list2
C)list1.equals(list2)
D) list1.compare(list2)

5- What will be the output of the code: d = {"a": 1, "b": 2, "c": 3}; print(d.get("d", 0))?
A) 2
B) 1
C) 0
D) 3

6- What will be the output of the code: set([1, 2, 3]) & set([2, 3, 4])?
A) {1, 3}
B) {1, 2, 3, 4}
C) {2, 4}
D) {2, 3}

7- What will be the output of len(set([1, 2, 2, 3, 3, 3]))?
A) 3
B) 4
C) 5
D) 6

8- What will be the output of the code: print([1, 2, 3] + [4, 5] * 2)?
A) [1, 2, 3, 8, 10]
B) [1, 2, 3, 4, 5, 10]
C) [1, 2, 3, 4, 5, 4, 5]
D) [1, 2, 3, 4, 5, 8, 10]

9- What is the output of the code: print(type(type(42)))?
A) int
B) class
C) type type
D) type

10- What will be the data type of the result of ((10 / 2)+(10//3)+(10%2))in Python 3?
A) Float
B) Integer
C) String
D) Complex

11-
```
for i in range(3):
    if i == 1:
        continue
    print(i)
```
A) 0
1
2
B) 0
2
C) 1
D) 0
1

12- What is the result of 3 if False else 5?
A) 3
B) 5
C) True
D) False

13- Which of the following is a valid Python expression to check if a number is both positive and even?

A) num > 0 and num % 2 == 0
B) num > 0 or num % 2 == 0
C) num > 0 && num % 2 == 0
D) num > 0 || num % 2 == 0
14- x = 7
if x > 5:
print("Hello")
if x > 4:
print("World")

Statements:
1- Hello
2- World
3- Hello World
4- No output

Which of these statements is true for the output of the above code snippet?
a)1
b)3
c) 1&2
d)error

15- What is the value of not (False or True)?
A) False
B) True
C) None
D) Error

16- What is the objective of the code written below?
values = [342, 107, 402, 998]
result = []
while values:
result.insert(0, values.pop())

A) Reverses the values list.
B) Doubles the values in the values list.
C) Creates a new list with reversed values.
D) Removes even numbers from the list.

17- Find the output of the code below:

```
x = (1, 2, 3)
y = x
y += (4,)
print(x)
```

A) (1, 2, 3)
B) (1, 2, 3, 4)
C) (1, 2, 3, 4)
D) Error

18- Find the output of the following code:

```
 t1 = (21, [32, 42], 24)
t1[1][0] = 0
print(t1)
```

A) (21, [32, 42], 24)
B) (21, [0,42], 24)
C) (21, 0, 24)
D) Error

19- What is the output of the following code?

```
def calc(num):
    i=0
    while(num%10>1):
        print(num**i)
        i+=1
        num-=1
    print("****")

n=5
for j in range(1,n+1):
    calc(j)
```

20- Find the output of the following.

```
data = {"a": 1, "b": 2}
for key in data:
data[key] *= 2
```

print(data)

A) {"a": 2, "b": 4}
B) {"a": 1, "b": 2}
C) {"aa": 1, "bb": 2}
D) {"a": 1, "b": 2, "aa": 2, "bb": 4}

21- What is the primary purpose of the super() function in Python when used within a class method?
A. Accessing the superclass's attributes directly.
B. Invoking the method defined in the superclass.
C. Initializing the class instance.
D. Creating a new instance of the superclass.

22-In Python, what is the significance of a "dunder" method, such as __init__ or __str__?
A. It indicates a method that should be avoided in programming.
B. It represents a special method with double underscores.
C. It is used to define private methods within a class.
D. It signifies a method with dual functionality.

23- Which of the following statements about Python's @property decorator is correct?
A. It is used to create static methods in a class.
B. It defines a method that cannot be overridden in subclasses.
C. It allows a method to be accessed as an attribute without parentheses.
D. It restricts access to a method only to the class that defines it.

24- What does the term "name mangling" refer to in Python classes?
A. Encrypting class and attribute names for security.
B. Automatically generating names for anonymous classes.
C. Adding a prefix to attribute names to make them unique within a class.
D. Removing underscores from attribute names for clarity.

25-In the context of Python's memory management, what does the __del__ method in a class primarily handle?
A. Initializing the class instance.
B. Cleaning up resources before an object is destroyed.
C. Defining the default behavior for string representations.
D. Managing object serialization.

DSA

1- What is the key difference between a stack and a queue?
A. Stacks follow LIFO (Last In, First Out) order, while queues follow FIFO (First In, First Out) order.
B. Stacks follow FIFO, while queues follow LIFO.
C. Both stacks and queues follow LIFO order.
D. Both stacks and queues follow FIFO order.

2- How can a stack be implemented using an array in Python?
A. Using append() and pop() methods
B. Using enqueue() and dequeue() methods
C. Using push() and pop() methods
D. Using add() and remove() methods

3- In the context of a stack, what is an overflow condition?
A. Popping an element from an empty stack
B. Pushing an element onto a full stack
C. Accessing an element beyond the stack's size
D. Removing the last element of the stack

4- Which of the following is an application of a queue in computer science?
A. Undo mechanism in text editors
B. Depth-First Search (DFS) algorithm
C. Backtracking in algorithms
D. Topological sorting of a graph

5- What is the time complexity for searching an element in a singly linked list with 'n' elements?
A. O(n)
B. O(log n)
C. O(1)
D. O(n^2)

6- What is the primary advantage of a doubly linked list over a singly linked list?
A. Reduced memory usage

B. Faster traversal
C. Simplicity in implementation
D. Ability to traverse in both directions

7- What is a circular linked list?
A. A linked list with a circular shape
B. A linked list in which the last node points to the first node
C. A linked list with circular references
D. A linked list with a fixed size

8- In a binary search tree (BST), what is the property that ensures efficient search operations?
A. All nodes have the same value.
B. The left subtree of a node contains only nodes with values less than the node.
C. The right subtree of a node contains only nodes with values greater than the node.
D. Every node has at most two children.

9- What is the height of a binary tree?
A. The number of nodes in the tree.
B. The length of the longest path from the root to a leaf.
C. The sum of depths of all nodes in the tree.
D. The depth of the root node.

10- Which traversal strategy visits the root node between the left and right subtrees?
A. In-order
B. Pre-order
C. Post-order
D. Level-order

11- What is the primary purpose of a heap data structure?
A. Sorting elements in ascending order.
B. Ensuring a balanced binary tree.
C. Maintaining the maximum (or minimum) element efficiently.
D. Storing elements with random access.

12- What is the time complexity of the merge sort algorithm?
A. O(n)
B. O(log n)
C. O(n log n)
D. O(n^2)

13- What is the significance of the term "NP-complete" in the context of algorithms?
A. It indicates a problem that is easy to solve.
B. It refers to a class of problems with no known polynomial-time algorithms.
C. It denotes a problem that can be solved in constant time.
D. It signifies problems with linear time complexity.

14- What is dynamic programming, and in what scenarios is it typically applied?
A. A programming paradigm that uses dynamic typing.
B. A technique for solving optimization problems by breaking them down into simpler subproblems.
C. A method for parallel processing in distributed systems.
D. A strategy for optimizing code execution in interpreted languages.

15- What is the purpose of the Big-O notation in algorithm analysis?
A. Representing the best-case runtime of an algorithm.
B. Providing an upper bound on the growth rate of an algorithm's runtime.
C. Describing the actual running time of an algorithm.
D. Specifying the average-case complexity of an algorithm.

16- When is a hash function considered a good hash function?
A. When it generates unique hash codes for all inputs.
B. When it produces the same hash code for different inputs.
C. When it minimizes collisions and distributes values evenly across the hash table.
D. When it has a fixed output size regardless of the input size.

17- What is the difference between BFS (Breadth-First Search) and DFS (Depth-First Search) in graph traversal?
A. BFS always finds the shortest path between two nodes.
B. DFS uses a queue for traversal.
C. BFS uses a stack for traversal.
D. DFS always explores deeper levels of the graph before moving to shallower levels.

18- How does the concept of "Recursion" apply to algorithms and programming?
A. It is a loop structure for repetitive tasks.
B. It refers to the use of multiple threads in parallel processing.
C. It involves a function calling itself to solve a smaller instance of a problem.
D. It is a technique for optimizing database queries.

19- What is the time complexity of inserting a node at the end of a singly linked list with 'n' elements?
A. O(n)
B. O(log n)
C. O(1)
D. O(n^2)

20- What is the primary disadvantage of using a linked list over an array?
A. Inefficient random access
B. Limited memory usage
C. Difficulty in implementation
D. Inability to store complex data types

DJANGO

1- In Django views, what is the purpose of the HttpResponseRedirect class?
A. To render a response with a specific status code.
B. To redirect the user to a different URL.
C. To handle HTTP requests asynchronously.
D. To set cookies for the client.

2- What does the Django template tag {% extends "base.html" %} do?
A. Imports the content of another template file.
B. Extends the template by including content from another template.
C. Defines a custom template tag.
D. Includes a static file in the template.

3- In Django models, what is the purpose of the ManyToManyField?
A. It defines a one-to-many relationship between two models.
B. It defines a many-to-one relationship between two models.
C. It creates a many-to-many relationship between two models.
D. It represents a primary key field.

4- What is the Django DetailView used for in a web application?
A. Displaying a list of objects.
B. Rendering a form for data input.
C. Showing details of a single object.
D. Handling user authentication.

5- In a Django template, how do you access the value of a specific key in a dictionary passed to the template context?

A. {{ dictionary.key }}
B. {{ dictionary[key] }}
C. {{ key.dictionary }}
D. {{ key[dictionary] }}