

----- SyllabusBuddy -----

Python MCQs (Recursion, Lists, Strings, Tables, etc.) (UNIT - 3)

1. What is the output of this code?

```
def recur(n):  
    if n == 0:  
        return 0  
    return n + recur(n - 1)  
  
print(recur(3))
```

- a) 6
- b) 3
- c) 0
- d) Error

Answer: a

Explanation: $3 + 2 + 1 + 0 = 6$; this is a simple recursive summation.

2. What does a stack diagram represent in recursion?

- a) List of errors
- b) Sequence of input values
- c) Function calls and their states
- d) Memory usage over time

Answer: c

Explanation: Stack diagrams visualize function calls and their local variables.

3. What is multiple assignment in Python?

- a) Assigning multiple values to multiple variables in one line
- b) Reassigning the same variable multiple times
- c) Assigning one value to many variables
- d) Using functions in assignments

Answer: a

Explanation: Example: `a, b = 1, 2` assigns 1 to a and 2 to b.

4. Which loop continues until the condition becomes False?

- a) for
- b) while
- c) until
- d) loop

Answer: b

Explanation: The while loop runs until its condition is False.

5. How do you create a two-dimensional table in Python?

- a) Using nested lists

- b) Using one list
- c) Using strings
- d) Using dictionaries only

Answer: a

Explanation: A 2D table can be made with nested lists like `[[1,2], [3,4]]`.

6. Which of these is a valid string slice?

- a) `str[1,3]`
- b) `str(1:3)`
- c) `str[1:3]`
- d) `str.1.3`

Answer: c

Explanation: `str[1:3]` accesses characters from index 1 up to (but not including) 3.

7. What is the output of `len("Python")`?

- a) 5
- b) 6
- c) 7
- d) Error

Answer: b

Explanation: There are 6 characters in the string "Python".

8. How do you compare two strings in Python?

- a) `==`
- b) `=`
- c) `cmp()`
- d) `compare()`

Answer: a

Explanation: `==` checks if both strings are equal.

9. What does `find()` return if the substring is not found?

- a) -1
- b) None
- c) Error
- d) 0

Answer: a

Explanation: The `find()` method returns -1 when the substring is not found.

10. What is the output of this code?

```
s = "python"
print(s[2:5])
```

- a) tho
- b) pyt
- c) yth

d) tho

Answer: d

Explanation: Index 2 to 4 gives 'tho'.

11. What is the effect of this code?

```
a = b = 10
```

a) Assigns 10 to a only

b) Assigns 10 to b only

c) Assigns 10 to both a and b

d) Throws an error

Answer: c

Explanation: Multiple assignment sets both a and b to 10.

12. Which method is used to iterate through a list?

a) for loop

b) while loop

c) both a and b

d) do-while

Answer: c

Explanation: Lists can be traversed using both for and while.

13. Which of these is a valid recursive function structure?

a) Repeats forever

b) No base case

c) Calls itself and has a base case

d) Must use while loop

Answer: c

Explanation: A recursive function must call itself and have a stopping condition.

14. What is printed?

```
def f(n):  
    if n <= 0:  
        return  
    print(n)  
    f(n - 1)
```

f(3)

a) 3 2 1

b) 1 2 3

c) 0 1 2

d) Error

Answer: a

Explanation: The function prints numbers in decreasing order.

15. What is the output?

```
s = "abcde"
print(s.find("cd"))
```

- a) 1
- b) 2
- c) 3
- d) -1

Answer: b

Explanation: "cd" starts at index 2.

16. Which is correct to traverse a string?

- a) for i in string
- b) for i in range(len(string))
- c) while loop
- d) All of the above

Answer: d

Explanation: All these methods are valid to traverse a string.

17. Which of the following modifies the original list?

- a) l + [1]
- b) l.append(1)
- c) l * 2
- d) l[1:]

Answer: b

Explanation: append() modifies the list in place.

18. What is the length of an empty list?

- a) 0
- b) 1
- c) -1
- d) None

Answer: a

Explanation: An empty list has 0 elements.

19. Which operator checks if one list contains another?

- a) in
- b) ==
- c) is
- d) contains

Answer: a

Explanation: in checks for membership.

20. What is the output?

```
table = [[1,2], [3,4]]
print(table[1][1])
```

- a) 2
- b) 3
- c) 4
- d) Error

Answer: c

Explanation: Accesses second row, second element.

21. Which of the following is not a valid list operation?

- a) append()
- b) sort()
- c) slice()
- d) reverse()

Answer: c

Explanation: There is no built-in method called slice(); slicing is done with [:] syntax.

22. Which of these defines a recursive factorial function correctly?

```
def fact(n):  
    if n == 0: return 1  
    return n * fact(n-1)
```

- a) Correct
- b) Error: no return
- c) Infinite loop
- d) Syntax error

Answer: a

Explanation: This is the standard way to define factorial recursively.

23. In a stack diagram, which function is removed first?

- a) First called
- b) Random
- c) Last called
- d) None

Answer: c

Explanation: It follows the LIFO (Last In First Out) principle.

24. What happens if there's no base case in a recursive function?

- a) Runs once
- b) Error
- c) Infinite recursion
- d) Compiles only

Answer: c

Explanation: Without a base case, recursion never terminates.

25. What is the output?

```
s = "hello"  
print(s[-2])
```

- a) e
- b) l
- c) o
- d) h

Answer: b

Explanation: Negative indices count from the end; -2 is 'l'.

26. What will `s.find("z")` return if `s = "python"`?

- a) 0
- b) -1
- c) Error
- d) None

Answer: b

Explanation: The `find()` method returns -1 if substring not found.

27. Which of the following is valid multiple assignment?

- a) `x = y = z = 10`
- b) `x, y = 5`
- c) `x = 5, y = 10`
- d) `a b = 10`

Answer: a

Explanation: All three variables will be assigned 10.

28. What is output of `list("abc")`?

- a) `['abc']`
- b) `['a', 'b', 'c']`
- c) `('a', 'b', 'c')`
- d) `'a', 'b', 'c'`

Answer: b

Explanation: The `list()` constructor splits a string into characters.

29. Which of these constructs a 3x2 2D list?

- a) `[[0]*2]*3`
- b) `[[0,0],[0,0],[0,0]]`
- c) `[[0 for i in range(2)] for j in range(3)]`
- d) All of the above

Answer: d

Explanation: All of these create 3x2 tables, but first one shares references.

30. Which of the following accesses the last element of list `lst`?

- a) `lst[-1]`
- b) `lst[len(lst)]`
- c) `lst[0]`
- d) `lst[-0]`

Answer: a

Explanation: -1 refers to the last element in Python.

31. Which loop type is preferred for indefinite iteration?

- a) for
- b) while
- c) do-while
- d) None

Answer: b

Explanation: while is best when the number of iterations isn't known in advance.

32. Which is the base case in a recursive sum function?

- a) return n
- b) return 0
- c) if n == 0
- d) return n + f(n-1)

Answer: c

Explanation: A proper base case stops recursion when a condition is met.

33. Which method adds an item to a list?

- a) add()
- b) insert()
- c) append()
- d) extend()

Answer: c

Explanation: append() adds one item to the end of a list.

34. In slicing, what does s[:3] mean?

- a) From index 0 to 3 (excluded)
- b) From index 1 to 3
- c) Last 3 items
- d) Error

Answer: a

Explanation: s[:3] means from beginning to index 2.

35. Which of the following defines a list with 3 elements?

- a) [1, 2, 3]
- b) list(1, 2, 3)
- c) {1, 2, 3}
- d) 1, 2, 3

Answer: a

Explanation: Only [] defines a list directly.

36. Which function finds a substring in a string?

- a) substring()
- b) find()
- c) locate()
- d) sub()

Answer: b

Explanation: find() returns the first index of the substring.

37. Which of the following has mutable elements?

- a) tuple
- b) string
- c) list
- d) int

Answer: c

Explanation: Lists are mutable; you can change their contents.

38. What is the output?

```
s = "python"
print(s[1:4])
```

- a) yth
- b) ytho
- c) ythn
- d) y

Answer: a

Explanation: Index 1 to 3 gives 'yth'.

39. Which keyword is used to define recursion?

- a) loop
- b) def
- c) recur
- d) call

Answer: b

Explanation: Recursive functions are defined using def.

40. Which data structure is used by the call stack in recursion?

- a) Queue
- b) List
- c) Stack
- d) Tree

Answer: c

Explanation: Recursive calls are managed using a stack structure.

41. Which of the following returns number of elements in a string?

- a) len()
- b) count()
- c) size()
- d) length()

Answer: a

Explanation: len() returns number of characters in a string.

42. What is the index of 'n' in 'Python'?

- a) 4
- b) 5

c) -1

d) 6

Answer: b

Explanation: Indexing starts from 0, 'n' is at position 5.

43. Which will raise an IndexError?

```
l = [10, 20]
```

```
print(l[3])
```

a) Always

b) Never

c) Only if list is empty

d) If list has <4 elements

Answer: d

Explanation: Accessing index beyond range causes IndexError.

44. Which will return True?

a) "abc" == "abc"

b) [1,2] == [1,2]

c) Both

d) Neither

Answer: c

Explanation: Both strings and lists are compared element by element.

45. What is the output of:

```
"abc".find("b")
```

a) 0

b) 1

c) 2

d) -1

Answer: b

Explanation: 'b' is at index 1.

46. Which will not create a copy of a list?

a) list1 = list2

b) list1 = list2.copy()

c) list1 = list(list2)

d) list1 = list2[:]

Answer: a

Explanation: This creates a reference, not a copy.

47. What does s[::-2] do?

a) Reverse string

b) Slice every 2nd char

c) Error

d) Uppercase

Answer: b

Explanation: Step of 2 returns every second character.

48. Which returns True?

- a) 'cat' < 'dog'
- b) 'dog' < 'cat'
- c) 'cat' > 'dog'
- d) None

Answer: a

Explanation: String comparison uses ASCII; 'c' < 'd'.

49. Which of these creates a list of 5 zeros?

- a) [0]*5
- b) list(0,0,0,0,0)
- c) zeros(5)
- d) zero*5

Answer: a

Explanation: [0]*5 repeats 0 five times.

50. Which of the following is false about recursion?

- a) Needs a base case
- b) Uses more memory than loops
- c) Is always more efficient
- d) Can be replaced with loops

Answer: c

Explanation: Recursion is not always more efficient than iteration.

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