100 Python Coding Questions (Cloud Engineer Oriented)

A. Basics & Core Concepts (1–20)

1. Print "Hello Cloud" in Python.
2. Take user input for name and print greeting.
3. Convert Celsius to Fahrenheit.
4. Check if a number is even or odd.
5. Find the largest of three numbers.
6. Swap two variables without a third variable.
7. Calculate factorial of a number.
8. Generate Fibonacci sequence up to N terms.
9. Check if a string is palindrome.
10. Count vowels in a given string.
11. Reverse a string without using slicing.
12. Find the sum of elements in a list.
13. Find the maximum number in a list without using `max()`.
14. Remove duplicates from a list.
15. Merge two dictionaries.
16. Sort a list without using `sort()` function.
17. Find intersection of two lists.
18. Count frequency of each word in a string.
19. Replace all spaces in a string with underscores.
20. Find all prime numbers between 1 and 100.

B. Functions & Modules (21–35)

21. Create a function to check if a number is prime.
22. Create a function to calculate area of a circle.
23. Create a function that accepts a list and returns the sum of squares of its elements.
24. Import `math` module and use `sqrt()` to find square root.
25. Write a recursive function for factorial.
26. Write a function to check leap year.
27. Function to return the reverse of a number.

28.Function to return unique elements from a list.

29.Create a module with a custom function and import it.

30.Lambda function to multiply two numbers.

31.Function to flatten a nested list.

32.Function to check if two strings are anagrams.

33.Function to generate random password of N characters.

34.Function to remove punctuation from a string.

35.Function to calculate GCD of two numbers.

C. File Handling (36–45)

36.Read a text file and print its contents.

37.Count the number of lines in a file.

38.Write user input to a file.

39.Append data to a file without overwriting.

40.Count the number of words in a file.

41.Read a CSV file using Python.

42.Write a list of dictionaries to a CSV file.

43.Read a JSON file and print specific values.

44.Convert Python dictionary to JSON and save it.

45.Merge two text files into one.

D. OOP in Python (46–60)

46.Create a `CloudResource` class with attributes and methods.

47.Create a class with a constructor and destructor.

48.Demonstrate inheritance with `AWSResource` and `EC2Instance` classes.

49.Show method overriding in Python.

50.Implement encapsulation with private variables.

51.Create a class method and a static method.

52.Implement polymorphism with two different classes.

53.Create a class that acts as an iterator.

54.Create a singleton class in Python.

55.Use `@property` decorator for a class attribute.

56.Create a class for managing AWS EC2 instance configurations.

57.Implement operator overloading in a class.

58.Use multiple inheritance in a class.

59.Create a class for logging cloud operations.

60.Create a base class for cloud resources and child classes for AWS, Azure, and GCP.

E. Python + Cloud/Automation (61–80)

61.Write a Python script to list all S3 buckets (Boto3).

62.Script to upload a file to S3.

63.Script to download a file from S3.

64.List all EC2 instances in a region.

65.Start and stop an EC2 instance via Python.

66.Create an IAM user using Python.

67.Attach a policy to an IAM role using Python.

68.List CloudWatch alarms using Python.

69.Create a CloudWatch alarm via Python.

70.Create an AWS Lambda function using Python script.

71.Trigger Lambda function on S3 upload event using Python.

72.Manage DynamoDB table (create, read, update, delete) with Python.

73.List Azure storage containers using Python SDK.

74.Upload a blob to Azure storage using Python.

75.Create a GCP storage bucket using Python.

76.List all files in a GCP storage bucket using Python.

77.Automate EC2 backup snapshots via Python.

78.Generate AWS billing report using Python.

79.Automate uploading logs from local to S3 every hour.

80.Delete unused EBS volumes using Python.

F. Advanced & Data Processing (81–90)

81.Parse JSON data from an API in Python.

82.Convert JSON to CSV using Python.

83.Read logs from CloudWatch and filter error messages.

84.Parse AWS CLI command output in JSON format.

85.Use Pandas to process a CSV file of cloud costs.

86.Create a matplotlib chart of AWS cost trends.

87.Use Python to monitor CPU usage of an EC2 instance.

88.Create alerts in Slack when EC2 CPU exceeds threshold.

89.Build a REST API in Flask to manage cloud resources.

90.Create a CLI tool in Python for AWS automation.

G. Problem Solving & Algorithms (91–100)

91.Implement binary search in Python.

92.Implement bubble sort in Python.

93.Implement quicksort in Python.

94.Find the second largest element in a list.

95.Rotate a list by N positions.

96.Find all pairs of numbers in a list that sum to a given value.

97.Detect cycle in a linked list (class implementation).

98.Implement stack operations in Python.

99.Implement queue operations in Python.

100.Solve the Tower of Hanoi problem using recursion.