Part A – Conceptual Questions

1. What are the key features of Python that make it suitable for data engineering?
2. Explain the difference between a variable and a constant in Python.
3. List Python's main built-in data types and give one example of each.
4. What is the difference between mutable and immutable data types? Give examples.
5. Difference between list, tuple, and set.
6. What is zero-based indexing? Explain with an example.
7. How do you check the type of a variable in Python?
8. What is the difference between `is` and `==` in Python?
9. Name Python's sequence types and explain their usage.
10. What are identity and membership operators in Python? Give examples.
11. Explain the difference between `append()` and `insert()` in lists.
12. What is tuple unpacking? Show an example.
13. How do you add an item to a set? Can sets have duplicate elements?
14. What is the difference between `remove()` and `discard()` in a set?
15. Explain what a slice is in Python and give an example.
16. What is the difference between `strip()`, `lstrip()`, and `rstrip()` in strings?
17. Name any 5 string methods and their usage.
18. How do you find the number of elements in a tuple?
19. What is the difference between `union()` and `update()` in sets?
20. Can a tuple contain mutable objects? Explain with an example.

Part B – Practical Coding Questions

21. Write a program to declare variables of different data types and print their types.
22. Take two strings as input and concatenate them with a space.
23. Given a string `" Data Engineering "`, remove spaces and convert it to uppercase.
24. Write a program to find the first and last character of a string.
25. Create a list of 5 integers and print the square of each using a loop.
26. Write a program to change the second element of a list.
27. Add `"Sunflower"` to a list of flowers using `append()`.
28. Insert `"Orchid"` at position 2 in a list.
29. Remove `"Rose"` from a list of flowers.
30. Write a program to print only even numbers from a list.
31. Create a tuple of fruits and print the third element.
32. Convert a tuple to a list, modify it, and convert it back to a tuple.
33. Count how many times `"Lotus"` appears in a tuple.
34. Create two sets and find their union and intersection.
35. Write a program to remove duplicates from a list using a set.
36. Create a set of numbers and remove an element using `discard()`.
37. Write a program to print all elements of a set using a loop.
38. Create a string `"apple,banana,cherry"` and split it into a list.
39. Join a list `['Python', 'is', 'fun']` into a single string with `-` separator.
40. Write a program to reverse a string without using slicing.

Part C – Scenario-Based Questions

41. You have a list of sales amounts: `[100, 200, 300, 150, 250]`. Write Python code to find the total and average sales.

42. Given a string containing names separated by commas, split them into a list and print each name.

43. You have a list of filenames: `["data.csv", "report.pdf", "sales.csv"]`. Print only `.csv` files.

44. Given a list of city names, print only those starting with `"A"`.

45. You have two sets of customer IDs. Find customers present in both sets.

46. Given a list of temperatures, remove all duplicates and print sorted values.

47. Write Python code to check if `"Data"` exists in a given string.

48. You have a tuple of product names. Convert it to a list, add a new product, and convert back to a tuple.

49. Given two lists of integers, find common elements without using loops.

50. You have a set of log messages. Remove `"INFO"` messages from it.