**Scripting Questions for DevOps Engineers**

**Intermediate Questions:**

1. What are positional parameters in shell scripting?
2. Difference between $\* and $@.
3. How do you read a file line-by-line in bash?
4. Use of set -e in scripts.
5. How to define and call functions.
6. How to check if a file exists.
7. Meaning of $? in shell scripting.
8. How to check if a variable is empty.
9. What does trap do in bash?
10. How to redirect both stdout and stderr.
11. How to use case statements.
12. How do you loop over files in a directory?
13. Use of IFS variable.
14. What is shift used for?
15. What is the purpose of exec?
16. Difference between source script.sh and ./script.sh.
17. How to pass arguments to a script.
18. How to exit a script with a status code.
19. How to perform arithmetic in shell scripts.
20. How to compare strings.
21. Difference between [ ] and [[ ]].
22. How do you comment a block in bash?
23. How to append to a file.
24. Difference between && and ||.
25. How to make a script executable.
26. How to get the length of a string.
27. How to slice a string in bash.
28. How to declare arrays and loop through them.
29. How to capture command output into a variable.
30. What is read command used for?
31. How do you write a script to monitor a process?
32. Use of getopts in command-line parsing.
33. What are here-documents in bash?
34. How to replace text in a file using sed.
35. How to count lines in a file.
36. What is the use of basename and dirname?
37. How to remove whitespace from a variable.
38. How to split a string by delimiter.
39. How to write logs to a log file.
40. How to check if a command exists in bash.

**Advanced Questions**

1. How to use associative arrays in bash.
2. How to handle parallel execution using &.
3. How do you use xargs with custom delimiters?
4. How do you trap and handle multiple signals?
5. Write a bash script with a dynamic menu.
6. Explain process substitution in bash.
7. How to profile a slow shell script.
8. How to create reusable bash libraries.
9. How to perform JSON parsing in shell.
10. How to read a config file and use values.
11. How to retry a failed command with a delay.
12. How to implement exponential backoff.
13. How to create a custom command-line tool with bash.
14. Use of eval and its dangers.
15. Difference between exec and subshell.
16. How to manage background jobs and wait.
17. How to ensure script idempotency.
18. How to prevent race conditions in parallel scripts.
19. How to create a lock file mechanism.
20. How to create colorized output in terminal.
21. How to encrypt and decrypt secrets in bash.
22. How to securely prompt for a password.
23. How to log stdout and stderr separately.
24. How to perform multi-threaded processing.
25. How to handle file locking in a bash script.
26. How to monitor memory usage of a process.
27. How to kill long-running processes via script.
28. How to write unit tests for bash scripts.
29. How to generate a dynamic HTML report.
30. How to create a cron job within a script.
31. How to parse XML with bash.
32. How to interact with REST API using curl in shell.
33. How to integrate a script with systemd service.
34. How to read .env file and export variables.
35. How to create a bash script to validate user input.
36. How to restrict execution to only one instance of the script.
37. How to use select for interactive menu creation.
38. How to write a script to monitor SSH failures.
39. How to build a shell wrapper for Docker commands.
40. How to display progress bars in bash.

**Scenario-Based Questions**

1. Write a script to monitor disk usage and alert when over 80%.
2. Write a script to clean /tmp directory older than 7 days.
3. Script to monitor a web service and alert on failure.
4. Rotate logs and keep last 5 files.
5. Backup MySQL DB daily with timestamp.
6. Validate IP addresses in a text file.
7. Read server IPs from a file and ping each.
8. Fetch and email top CPU-consuming processes.
9. SSH into multiple servers and execute commands.
10. Script to archive application logs to S3.
11. Script to restart a service if down.
12. Script to tail multiple logs in parallel.
13. Monitor SSL cert expiration.
14. Parse log file and count failed logins.
15. Report users with UID > 1000.
16. Find and kill zombie processes.
17. Script to compare two directories for differences.
18. Monitor network bandwidth in real-time.
19. Script to create users from CSV file.
20. Alert if a Docker container is not running.
21. Script to auto-deploy a static site using rsync.
22. Create a script to automate git pull and restart service.
23. Generate a dynamic inventory file for Ansible.
24. Build a script to validate YAML/JSON files.
25. Parse Jenkins job status via API and alert if failed.