1. What is DevOps?

Answer: DevOps is a set of practices that combine software development(Dev) and IT operations (Ops) to improve collaboration, automate workflows, and accelerate software delivery.

2. What are the main goals of DevOps?

Answer:

- Faster delivery of software
- Improved collaboration between teams
- Automation of repetitive tasks
- Continuous feedback and improvement

3. What are the key components of DevOps?

Answer:

- CI/CD (Continuous Integration/Continuous Deployment)
- Infrastructure as Code (IaC)
- Monitoring and Logging
- Collaboration and Communication

4. How does DevOps differ from traditional IT operations?

Answer: DevOps focuses on automation, collaboration,andcontinuous feedback,whereas traditional IT operations followasiloedapproach with manual deployments and slow release cycles.

5. What is Continuous Integration (CI)?

Answer: CIisapracticewheredevelopersfrequentlyintegrate code into asharedrepository,followedbyautomatedtestingtodetect errors early.

6. What is Continuous Deployment (CD)?

Answer: CDistheautomatedreleaseofvalidatedcodechanges into production, ensuring rapid and reliable delivery.

7. What is Infrastructure as Code (IaC)?

Answer: IaCismanaginginfrastructureusingcode,enabling automation, consistency, and easy scalability. Examples: Terraform, CloudFormation.

8. What is version control, and why is it important?

Answer: Versioncontroltrackscodechanges,enabling collaboration and rollback. Example: Git.

9. What are some popular version control tools?

Answer: Git, GitHub, GitLab, Bitbucket, Subversion (SVN).

10. What is a DevOps pipeline?

Answer: ADevOpspipelineautomatessoftwaredelivery using stages like build, test, deploy, and monitor.

11. What is containerization?

Answer: Containerization packages applicationswithdependencies, makingthemportableand consistent acrossenvironments. Example: Docker.

12. What are microservices?

Answer: Microservices are small, independent services that communicate via APIs, improving scalability and maintainability.

13. What is a monolithic vs. microservices architecture?

Answer: Monolithicappshaveasinglecodebase;microservicesbreak theapplicationinto independent,looselycoupledservices.

14. What are some common DevOps automation tools?

Answer:

- CI/CD: Jenkins, GitHub Actions
- Configuration Management: Ansible, Puppet
- Infrastructure as Code: Terraform

15. What is Shift-Left Testing?

Answer: Shift-lefttestingintegratestestingearly in the development cycle to detect bugs earlier.

16. What is observability in DevOps?

Answer: Observabilityprovidesinsightsintosystem health using logs, metrics, and tracing.

17. What is a rollback strategy?

Answer: Arollbackstrategyrevertstoaprevious stable version if a new deploymentfails.

18. What is the role of a DevOps Engineer?

Answer: ADevOpsengineerbridgesdevelopmentandoperations, focusing on automation, CI/CD, and cloud management.

19. What are feature flags in DevOps?

Answer: Featureflagsallowtogglingfeatureson/offwithoutdeploying new code.

20. What is a blue-green deployment?

Answer: Blue-greendeploymentmaintainstwoenvironments,switching traffic between them for zero-downtime updates.

21. What is Site Reliability Engineering (SRE)?

Answer: SREappliessoftwareengineeringprinciplestooperations, improving reliability and scalability.

22. How does DevOps help in cloud computing?

Answer: DevOps automates infrastructure, deployments, and monitoring, making cloud environments scalable and efficient.

23. What is Immutable Infrastructure?

Answer: Immutableinfrastructurereplacesserversinsteadofmodifying them, ensuring consistency and reducing drift.

24. How does DevSecOps integrate security into DevOps?

Answer: DevSecOpsembedssecurityateverystageoftheDevOps lifecycle, using automated security scansand compliance checks.

25. What are the benefits of CI/CD pipelines?

Answer:

- Faster releases
- Automated testing
- Reduced manual errors
- Enhanced collaboration

26. What is canary deployment?

Answer: Canarydeploymentgraduallyrollsoutchangesto a small user group before full deployment.

27. What are some common monitoring tools?

Answer: Prometheus, Grafana, ELK Stack, Datadog, New Relic.

28. What is Configuration Management in DevOps?

Answer: Configurationmanagementautomatesinfrastructuresetup and maintenance. Examples: Ansible, Puppet, Chef.

29. What is GitOps?

Answer: GitOpsmanagesinfrastructureusingGitrepositories,ensuring version control and automation.

30. How do you handle secrets management in DevOps?

Answer: UsingtoolslikeHashiCorpVault,AWSSecretsManager,and Kubernetes Secrets.

31. What is Chaos Engineering?

Answer: Chaos Engineering tests system resilience by introducing controlled failures.

32. What is a service mesh?

Answer: Aservicemeshmanagesmicroservicescommunicationusing proxies like Istio and Linkerd.

33. What is an API gateway?

Answer: An API gateway manages API traffic, security, and load balancing.

34. How do you optimize CI/CD pipelines?

Answer: By parallelizing builds, caching dependencies, and using automated testing.

35. What is hybrid cloud in DevOps?

Answer: A hybrid cloud combines private and public cloud environments.

36. What is observability vs. monitoring?

Answer: Monitoringcollectsdata;observabilityprovidesdeeperinsights into system behavior.

37. What are Helm charts?

Answer: Helm charts package Kubernetes applications for easier deployment.

38. What is A/B testing in DevOps?

Answer: A/Btestingcomparesdifferentversionsofanapplicationto determine the best performance.

39. How do you handle database schema changes in CI/CD?

Answer: UsingtoolslikeFlywayorLiquibaseforversion-controlled migrations.

40. What is autoscaling in cloud environments?

Answer: Autoscalingautomaticallyadjustsresourceallocation based on demand.