

# Kubernetes QA

## Kubernetes Architecture

1. What is Kubernetes?
2. Describe the architecture of Kubernetes.
3. What is a Kubernetes cluster?
4. What are the components of the Kubernetes control plane?
5. Explain the role of the kube-apiserver.
6. What is the function of etcd in Kubernetes?
7. Describe the role of the kube-scheduler.
8. What is the kube-controller-manager?
9. What is the purpose of the cloud-controller-manager?
10. Explain the role of the kubelet.
11. What is the function of kube-proxy?
12. Describe the role of a Pod in Kubernetes.
13. How do Namespaces work in Kubernetes?
14. What is the role of the Container Runtime in Kubernetes?

## Kubernetes Objects

15. What are Kubernetes objects?
16. Explain the concept of a Deployment in Kubernetes.
17. What is a ReplicaSet?
18. How does a StatefulSet differ from a Deployment?
19. What is a DaemonSet?
20. Describe the purpose of a Job in Kubernetes.
21. What is a CronJob?
22. How do ConfigMaps work?
23. Explain the purpose of Secrets in Kubernetes.
24. What is a PersistentVolume (PV)?
25. Describe the role of PersistentVolumeClaim (PVC).
26. What is a Service in Kubernetes?
27. Explain the purpose of Ingress in Kubernetes.

- 28. What is a NetworkPolicy?
- 29. Describe the purpose of a ResourceQuota.

## Kubernetes Deployment and Management

- 30. How do you create a Kubernetes cluster?
- 31. What tools can you use to manage Kubernetes clusters?
- 32. How do you deploy a Pod in Kubernetes?
- 33. Explain how to scale a Deployment.
- 34. What is rolling update strategy?
- 35. Describe a blue-green deployment strategy in Kubernetes.
- 36. How do you perform a canary deployment in Kubernetes?
- 37. What is Helm in Kubernetes?
- 38. How do you use Helm to manage Kubernetes applications?
- 39. What is Kustomize?
- 40. Explain how to use kubectl.
- 41. How do you monitor a Kubernetes cluster?
- 42. What are the common tools for Kubernetes logging?
- 43. How do you handle logging in Kubernetes?
- 44. What is the role of Prometheus in Kubernetes

## Kubernetes Networking

- 45. How does networking work in Kubernetes?
- 46. Explain the concept of ClusterIP.
- 47. What is a NodePort?
- 48. Describe the purpose of a LoadBalancer Service.
- 49. What is kube-dns or CoreDNS?
- 50. How do you implement service discovery in Kubernetes?
- 51. Explain how network policies work.
- 52. What is a CNI plugin?
- 53. How does flannel work as a CNI plugin?
- 54. Explain the role of Calico in Kubernetes networking.
- 55. What is the purpose of Istio in Kubernetes?
- 56. Describe the concept of a service mesh.

- 57. How do you set up Istio in a Kubernetes cluster?
- 58. Explain the role of Envoy in Istio.
- 59. What is Linkerd and how does it compare to Istio?

## Kubernetes Storage

- 60. How does storage work in Kubernetes?
- 61. What are the different types of PersistentVolumes?
- 62. How do you manage dynamic provisioning of storage?
- 63. What is StorageClass in Kubernetes?
- 64. Explain the concept of volume plugins.
- 65. What is CSI (Container Storage Interface)?
- 66. How do you configure local storage in Kubernetes?
- 67. What are StatefulSets and how do they handle storage?
- 68. How do you handle database deployments in Kubernetes?
- 69. What is the purpose of a VolumeSnapshot?
- 70. How do you perform backup and restore in Kubernetes?
- 71. Explain the use of Rook in Kubernetes storage.
- 72. What is Ceph and how is it used in Kubernetes?
- 73. Describe the use of GlusterFS in Kubernetes.
- 74. What is the role of NFS in Kubernetes storage?

## Kubernetes Security

- 75. How does security work in Kubernetes?
- 76. What is RBAC (Role-Based Access Control)?
- 77. How do you configure RBAC in Kubernetes?
- 78. What are ServiceAccounts?
- 79. Explain the purpose of PodSecurityPolicies.
- 80. How do you use NetworkPolicies for security?
- 81. What is a Secret in Kubernetes and how do you manage it?
- 82. How do you secure etcd?
- 83. Explain the concept of mTLS in Kubernetes.
- 84. What are Pod Security Contexts?
- 85. How do you perform vulnerability scanning in Kubernetes?

- 86.What is the role of Open Policy Agent (OPA)?
- 87.How do you integrate OPA with Kubernetes?
- 88.Describe the concept of admission controllers.
- 89.What is the purpose of Aqua Security in Kubernetes?

## Kubernetes Advanced Topics

- 90.How do you manage multi-cluster Kubernetes environments?
- 91.What is Federation in Kubernetes?
- 92.Explain the concept of Operators in Kubernetes.
- 93.How do you create a Kubernetes Operator?
- 94.What is the role of Custom Resource Definitions (CRDs)?
- 95.How do you manage Kubernetes upgrades?
- 96.What is KubeVirt and how is it used?
- 97.Describe the concept of serverless in Kubernetes.
- 98.How do you implement serverless with Knative?
- 99.What is the role of Argo in Kubernetes?
- 100. Explain how you can use Kubernetes for CI/CD.