KCNA Kubernetes Certified Network Administrator #2

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In the context of cloud native environments, which persona primarily focuses on optimizing cloud costs and financial management?	FinOps
In Kubernetes, which command is used to run another command within an existing container?	kubectl exec
Which of these technologies is incompatible with the Kubernetes Container Runtime Interface (CRI)?	VirtualBox
What is true about Pod-to-Pod communication within the same node in Kubernetes?	Pods use direct, NAT-less networking for communication on the same node
In Kubernetes, which two types of resources are used to expose applications to external traffic, including options like ClusterIP, NodePort, and LoadBalancer?	Services and Ingress
In Kubernetes, which object is most suitable for deploying stateless applications?	Deployment
Which of these options is a Service Mesh implementation specifically designed for Kubernetes, known for its simplicity and ease of use?	Linkerd
In Kubernetes, which feature is effective for managing costs by allowing for the categorisation and organisation of resources?	Labels
What is the reference implementation of the Open Container Initiative (OCI) runtime specification?	runc
For how long is the Kubernetes API guaranteed to be backward compatible following a release?	1 year
What layer of a software architecture is primarily targeted by OpenTracing and OpenTelemetry for monitoring and observability?	Application
In Kubernetes, which component is primarily responsible for managing a Node?	Kubelet
In cloud computing, which approach is best suited for simultaneously managing security threats and optimising costs by identifying unusual activities?	Cloud Anomaly Detection
In a Kubernetes cluster, which component is responsible for routing traffic for services and managing IP rules?	Kube-Proxy
What are the three pillars of observability in a software system?	Logs, Metrics, Traces
What is the primary function of the kubectl top command in Kubernetes?	To display the resource usage of pods and nodes in the cluster
What is the primary purpose of kube-state-metrics in a Kubernetes cluster?	To generate and expose cluster state data
In telemetry, which entity is primarily used to record and analyse the path that a request takes through various services in a distributed system?	Traces
In a Kubernetes cluster, which component runs on every node to manage the lifecycle of containers?	Kubelet
Which kubectl command is used to view the logs of a terminated container in a multi-container pod in Kubernetes?	kubectl logs [pod-name] -c [container-name] -p
Which open-source tool is specifically designed for assessing the security posture of Kubernetes clusters according to NSA and CISA guidelines?	KubeScape
In the context of etcd used in Kubernetes, what is the significance of the 1.5MB size limit for etcd?	It is the recommended maximum size for an individual value stored in etcd
In a cloud-native environment, which persona is typically responsible for managing Service Level Agreements (SLAs), Service Level Indicators (SLIs), and Service Level Objectives (SLOs)?	Site Reliability Engineer (SRE)

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Which Kubernetes distribution, known for its minimal resource requirements and ease of installation, is particularly well-suited for IoT and edge computing environments?	k3s
When a Pod is created in Kubernetes without specifying a Service Account, which default Service Account is used?	default
In the context of Cloud Native Security, what is the correct order for the 4C's framework?	Cloud, Clusters, Containers, Cloud
Which architectural pattern in cloud computing allows you to build and run applications and services without managing infrastructure, typically billed based on usage rather than pre-allocated capacity?	Serverless
Which software is widely used in Kubernetes environments for cloud-native storage orchestration?	Rook
In a Kubernetes environment, which software is widely used as a lightweight proxy to handle the traffic management between microservices?	Envoy
In Kubernetes, which security-focused tool is commonly used for runtime security monitoring and detection of anomalous activities within containers and pods?	Falco
Which of the following is a lightweight container runtime specifically designed for Kubernetes, conforming to the Container Runtime Interface (CRI)?	CRI-O
Which open-source storage platform offers integrated block, file, and object storage, making it a versatile choice for distributed environments?	Ceph
In Kubernetes, what is Ephemeral Storage with respect to a Pod?	Temporary storage assigned to a Pod, which is deleted when the Pod is removed
In the world of software development and continuous integration, what tool is widely used for automating building, testing, and deploying applications?	Jenkins
In the realm of Kubernetes, which tool is specifically designed for orchestrating and managing complex parallel workflows and batch jobs?	Argo Workflows
Which cloud-native tools enable Kubernetes clusters to be automatically synchronised with Git repositories?	Argo CD & Flux
In Kubernetes, which tool is specifically designed as a comprehensive service mesh to control, secure, and observe the interactions between microservices, apart from facilitating advanced traffic management?	Istio
What are CloudEvents in the context of cloud computing?	A set of standards for describing event data in a common way
In the context of cloud-native applications, which framework is recognised as the standardised interface specification for service meshes?	ServiceMeshInterface (SMI)
Which tool is specifically designed for monitoring and managing costs in a Kubernetes environment, providing insights into spending and resource optimisation?	KubeCost
In a cloud-native organisation, which role is primarily responsible for building and maintaining the underlying platform infrastructure, enabling application developers to deploy and run their services efficiently?	Platform Engineers
Which open standard provides a specification for container images and runtimes, ensuring consistency and compatibility in the container ecosystem?	Open Container Initiative (OCI)

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In the field of IT operations and software development, SRE stands for a discipline that emphasizes automation, continuous improvement, and a balanced approach to system reliability and features. What does SRE stand for?	Site Reliability Engineering
In the Cloud Native Computing Foundation (CNCF) groups, how are conflicts typically resolved?	By discussion and voting
In Kubernetes, what is a service called when it is created without a ClusterIP?	Headless Service
In Kubernetes, how are the container specifications in Deployments and StatefulSets similar?	Both Deployments and StatefulSets use the same container spec within their pod templates
Which statement is true about Ingress in Kubernetes in relation to the routing of traffic?	Ingress routes external HTTP and HTTPS traffic to services within the cluster
In Kubernetes, what is the relationship between Deployments and ReplicaSets?	ReplicaSets are created and managed by Deployments to ensure the desired number of pod replicas
In Kubernetes, when using Secrets to store sensitive data, how is the data stored within the Secret by default?	Stored unencrypted in base64 encoding
In Kubernetes, which object is recommended for managing jobs that need to run multiple times according to a batch process?	CronJob
What are the four types of Kubernetes Services?	ClusterIP, NodePort, LoadBalancer, ExternalName
Which Kubernetes component interacts with the Container Runtime Interface (CRI)?	Kubelet
What does "SIG" stand for in the context of Kubernetes projects?	Special Interest Group
Which Kubernetes feature automatically scales the number of pods in a deployment or replica set based on observed CPU utilisation or other select metrics?	Horizontal Pod Autoscaler
How does KEDA enable event-driven autoscaling in Kubernetes, and what custom resource does it utilise for this purpose?	By scaling applications based on external metrics, using ScaledObjects
Which Kubernetes component is responsible for exposing applications running on a set of Pods as a network service?	Service
What is the primary function of the Kubelet in a Kubernetes cluster?	It manages the lifecycle of containers on a node
Which Linux feature is utilised by Kubernetes for container isolation, limits the resource usage of a process or a set of processes?	cgroups
In Kubernetes, how do you add persistent storage to a Pod?	By defining a PersistentVolumeClaim in the Pod specification
In the Open Container Initiative (OCI) Specification, which areas are standardised?	Container image format, runtime environment, and distribution
What is Ephemeral Storage in the context of Kubernetes?	A temporary storage type that is tied to the lifecycle of a Pod
How do Pod Disruption Budgets (PDBs) in Kubernetes help manage voluntary disruptions?	They ensure a minimum number of pods are always running during voluntary disruptions
What is the term for the process of automatically increasing or decreasing the number of instances based on demand?	Horizontal scaling
What is the purpose of the RollingUpdate strategy in a Kubernetes Deployment?	To incrementally update pods with a new version while maintaining availability
In Kubernetes, when would you use co-located containers within a single Pod, specifically in a sidecar pattern?	When the sidecar container provides auxiliary support, like logging or monitoring, to the main application container
Which Kubernetes resource is most useful for running tasks on a predefined schedule?	CronJob
What is the primary purpose of the kubectl explain command in Kubernetes?	To show documentation and field definitions for Kubernetes resources
How does the Container Network Interface (CNI) in Kubernetes relate to Network Policies?	The CNI is responsible for implementing the rules defined in Network Policies

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When the kubectl expose command is used in Kubernetes, which component is created?	Service
Which component in Kubernetes automatically adjusts the number of nodes in a cluster based on the demands of the workloads?	Cluster Autoscaler
Which of the following represents the correct hierarchical workflow of components in a Kubernetes environment?	Cluster, Nodes, Pods, Containers
In Kubernetes, what is a Service primarily used for?	Exposing an application running on a set of Pods as a network service
Which Kubernetes resource is responsible for dynamically autoscaling the resources (like CPU and memory) of pods?	Vertical Pod Autoscaler
Which Kubernetes autoscaling solution has the capability to scale workloads down to zero pods?	Kubernetes Event-Driven Autoscaling (KEDA)
In Prometheus, which metric type represents a value that can arbitrarily go up or down, like temperature or memory usage?	Gauge
In Kubernetes, Pod Disruption Budgets (PDBs) were introduced to protect against voluntary disruptions. What is their primary function	Maintaining a minimum number of available replicas during voluntary disruptions
Which of the following best describes the concept of vertical scaling of an application?	Increasing the computational resources (like CPU or memory of an existing instance)
Which of the following is a component of the Kubernetes Control Plane?	cloud-controller-manager
In Kubernetes, which feature is crucial for managing distributed stateful applications to avoid conflicts like "split-brain" scenarios?	StatefulSets
What are the default namespaces in a Kubernetes installation?	default, kube-system, kube-public, kube-node-lease
What is Helm in the context of Kubernetes?	A package manager that simplifies deployment of applications in Kubernetes
In Kubernetes, what is a 'sidecar' container?	A container that runs alongside the main container to handle administrative tasks
In Kubernetes, what modification is made to a ClusterIP service to create a headless service?	Setting the ClusterIP to 'None'
In a Kubernetes node, which component is directly responsible for running containers?	Container Runtime
In a Kubernetes node, which component is primarily responsible for ensuring that the containers are running as defined in the Pod specifications?	Kubelet
How many types of services are there in Kubernetes?	Four
In a Pod, which Linux namespace do containers usually share?	Network namespace
What are common components found in a service mesh implementation?	Data plane and control plane
Which tool is typically used in combination with Prometheus to visualise and analyse data?	Grafana
What does CNCF stand for in the context of cloud-native computing?	Cloud Native Computing Foundation
Which Kubernetes resource should you use if you need to ensure that an instance of a pod runs on every node in the cluster?	DaemonSet
What does IaC stand for in the context of cloud computing and DevOps?	Infrastructure as Code
In the context of Kubernetes, what is the primary use of the Open Policy Agent (OPA)?	For validating and enforcing policies and requests
In terms of security best practices for containerization, why is it considered a bad practice to omit the USER directive in a Dockerfile?	The container will run as root which poses a security risk

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In a managed public cloud Kubernetes service, which component is most closely associated with issues like a LoadBalancer being stuck in a pending state?	Cloud Controller Manager
In Kubernetes architecture, which component is considered the "source of truth" for all cluster state and configuration?	etcd
What is a Dockerfile in the context of containerization?	A text document containing all the commands to build a Docker image
In a cloud-native environment, which persona is typically responsible for the creation and execution of an incident management procedure?	Site Reliability Engineer (SRE)
As a Site Reliability Engineer (SRE), which task would typically fall under your purview, especially in the context of ensuring system reliability?	Implementing and fine-tuning thresholds and alerts for monitoring system health
Which of the following groupings exclusively consists of valid Kubernetes container restart policies?	Always, OnFailure, never
Which product is built using the GitOps Toolkit, a set of composable APIs and specialised tools for building GitOps-based continuous delivery systems?	Flux
What is particularly beneficial for automating the building, testing, and deployment of software applications, ensuring consistent and efficient delivery processes?	CI/CD Pipelines
What option aligns to the 'traditional' workflow of a CI/CD pipeline, where "D" in CI/CD stands for Deployment?	Build, Testing, Release, Deployment
Who is responsible for the governance and operation of hosted projects under the Cloud Native Computing Foundation (CNCF)?	The CNCF Technical Oversight Committee
In a Kubernetes cluster architecture, which component acts as the central management entity, processing RESTful requests to manage and control the various resources within the cluster?	Kubernetes API Server
In Kubernetes, how do Network Policies behave when multiple policies are applied to the same set of pods?	They are additive, where each additional policy further restricts allowed traffic
In Kubernetes, what primary benefit is achieved by implementing NetworkPolicy resources?	Controlled and restricted network traffic flows between pods as required
In a Kubernetes cluster, what is the primary role of etcd?	To store configuration and state data for the cluster
In the context of Kubernetes, which component is responsible for running containers on each node in the cluster?	Container-Runtime
In the context of Kubernetes, which component on a node is responsible for running containers as specified in the Pod definitions?	Kubelet
In Kubernetes, which component is a part of the node infrastructure rather than the control plane?	kube-proxy
In Kubernetes, which entities can utilise the immutable:true attribute to ensure that their data cannot be modified after creation?	ConfigMaps and Secrets
What does the acronym OIDC stand for in the context of authentication and authorization?	Open ID Connect
What is the default setting for the --authorization-mode flag in the Kubernetes API server if the --authorization-config is not used?	AlwaysAllow
Which function is primarily associated with Kubernetes Security Contexts?	Defining container or pod level security settings
Kubernetes Security Profiles, such as PodSecurityPolicies (PSP) and Kyverno, are essential for enforcing security standards in a Kubernetes environment. Which of the following best describes the primary function of these Kubernetes Security Profiles?	Defining and enforcing security settings at the pod level

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In Kubernetes security, what differentiates Security Contexts from Security Policies (Like PodSecurityPolicies or Kyverno) in terms of their scope and focus?	Security Contexts operate at the container runtime level, while Security Policies work at the cluster control plane level
When creating containers using multistage builds in Docker, what technique can you employ to reduce the size of the final container image?	Utilize multiple build stages to discard unnecessary build artifacts and dependencies
To achieve consistent DNS naming for pods managed by a StatefulSet in Kubernetes, what additional Kubernetes resource should you use?	Headless Service
In Kubernetes, what is the smallest unit of compute that you can define and manage?	Pod
In the context of Persistent Volume Claims (PVCs) in Kubernetes, what is the Manual Reclamation Policy typically recognised as?	Retain
When using kubectl to monitor and track the progress of a deployment rollout in Kubernetes, which command or option should you use?	kubectl rollout status deployment/<deployment-name>
In the context of Kubernetes configuration files and manifests, what types of objects are Services and Pods typically represented as?	YAML Objects
When you need to manage and provide persistent data for an application running in Kubernetes, which resource should you use?	Persistent Volume
In Kubernetes, how would you enable data sharing between different cronjobs running at various times?	Persistent Volume Claim (PVC)
What is the primary purpose of an Init Container in Kubernetes?	To execute pre-start tasks or setup actions before the main application container starts
When using kubectl apply in Kubernetes, what is a potential drawback related to tracking the state of resources?	If you remove resources from the applied manifest, kubectl apply may not track them and can inadvertently delete those resources
In Kubernetes, what could be a use case for combining Init Containers with Persistent Volume Claims (PVCs)?	To initialize a database schema before the application starts
Which kubectl command is used to list all the API resources, such as Pods, Services, and Deployments, available in a Kubernetes cluster?	kubectl api-resources
Which kubectl command would you use to apply the configurations from a manifest.yaml file to create or update resources in a Kubernetes cluster?	kubectl apply -f manifest.yaml
What are the four pillars of Cloud Native Architecture?	Microservices, Containers, DevOps, CI/CD
In Kubernetes, what event triggers the kube-scheduler to assign a Pod to a specific node?	When a new Pod is created and needs to be scheduled
Which of the following are valid restart policies for containers in Kubernetes?	Always, Never, OnFailure
In Kubernetes, what is an Endpoint primarily used to represent?	The IP addresses and ports of a Pod backing a Service
What does the nodeSelector field in a PodSpec use to place Pods on specific nodes in a Kubernetes cluster?	Labels assigned to Nodes
What statement is correct regarding the Open Policy Agent (OPA) in the context of Kubernetes?	Kubernetes can use OPA to validate requests and apply policies across the cluster
The cloud-native architecture centered around microservices proves to be a strong system that ensures what key quality in software systems?	Resiliency
In the CI/CD pipeline, what does "Integration" in Continuous Integration (CI) particularly emphasise?	The combination and testing of code changes from multiple developers to a shared repository
What are the primary modes of service discovery within a Kubernetes cluster?	Environment Variables and DNS

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In Kubernetes, which authorization mode is known for offering detailed control over what specific actions can be performed on different resources within the cluster?	Role-Based Access Control (RBAC)
What is the primary purpose of the Container Runtime Interface (CRI) in Kubernetes?	To provide a standard for implementing container runtimes compatible with Kubernetes
What are the core features typically provided by a service mesh in a cloud-native environment?	Distributing and replicating data across multiple services
In Kubernetes, what does Service Discovery refer to?	A system that allows services to locate and communicate with each other on the network
Which of the following is a valid example of semantic versioning?	1.2.3
Which of the following container runtimes are recognized for providing enhanced security features, such as stronger isolation through virtualization?	Kata Containers and gVisor
In Kubernetes, what are Service Endpoints primarily used for?	Tracking the IP addresses and ports of Pods associated with a Service
During the phase when container images are being downloaded for a Pod in Kubernetes, what state is the Pod typically in?	Pending
What is the default update strategy used by Kubernetes Deployments for rolling out updates?	RollingUpdate
In the context of Kubernetes, what is a 'Sidecar' container?	A container running alongside the main application container to augment or enhance it
What tool is commonly used for installing and managing applications in a Kubernetes cluster?	Helm