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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 43811 Roll No.

B. Tech Examination 2026

(Even Semester)

CLOUD NATIVE

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION–A

1. Attempt all parts of the following : $1 \times 8 = 8$

   (a) Define a cloud-native application.

   (b) What is the twelve-factor app methodology?

   (c) Define a pod in the context of kubernetes.

   (d) What is the role of a namespace in red hat openshift?

P.T.O.

(e) Define DevSecOps.

(f) What is a ConfigMap?

(g) What do you mean by image stream?

(h) What is the purpose of the downward API.

SECTION – B

2. Attempt any two parts of the following : $6 \times 2 = 12$

(a) Explan the concept of Hybrid cloud. Also discuss its connectivity and benefits in application modernization.

(b) Compare and contrast between virutal machines and containers in details.

(c) Discuss the technical architecture of the kubernetes container platform in detail.

(d) Describe the continuous integration (CI) workflow, its best practices, and the challenges of application integration in a cloud environment.

SECTION – C

Note:- Attempt any two parts of the following. Each parts carry equal marks. $5 \times 8 = 40$

3. (a) Describe the vision of cloud-native application development from a global context.

   (b) Explan the microservices architecture and how it integrates within the IBM Kubernetes Service (IKS).

   (c) Discuss the security architecture concepts inherent in a Hybrid cloud environment.

4. (a) Explain the internal and external routing mechanisms within kubernetes, including the role of the routter in brief.

   (b) Describe the process of application creation and autoscaling within Red Hat Openshift in detail.

   (c) Explain the workflow of a pod deployment in a kubernetes cluster in detail.

P.T.O.

5. (a) Explain the *role* of volumes and persistent volumes in cloud-native applicaion development in detail.

(b) Differentiate between secrets and environment variables when configuring aplications on red hat openshift.

(c) Disuss the concept of a delivery pipeline and its role in the continuous deployment (CD) process.

6. (a) Explan how to review logs and events using Red Hat OpenShift's built-in logging, monitorng, and metric dashboards.

(b) Describe the process of scaling an application and triggering a new deployment within Red Hat OpenShift on IBM Cloud.

(c) Discuss the integration of a Red Hat Openshift Cluster with external services like cloudant in brief.

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