| Roll No. | | | | | | | | | | | | |
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# PRESIDENCY UNIVERSITY

## BENGALURU

**End - Term Examinations – December 2025**

**Date:** 12-12-2025 **Time:** 01:00pm– 04:00pm

| | | |
|---|---|---|
| **School:** SOCSE | **Program:** B.Tech. Computer Science and Technology (CDV) | |
| **Course Code:** CDV2507 | **Course Name:** Kubernetes and Container Orchestration | |
| **Semester**: V | **Max Marks**: 100 | **Weightage**: 50% |

| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
|---|---|---|---|---|---|
| **Marks** | **26** | **26** | **24** | **24** | |

**Instructions:**

*(i) Read all questions carefully and answer accordingly.*

*(ii) Do not write anything on the question paper other than roll number.*

## Part A

**Answer ALL the Questions. Each question carries 2marks.** **10Q x 2M=20M**

| | | | | |
|---|---|---|---|---|
| **1.** | What is a Kubernetes cluster? | **2 Marks** | **L1** | **CO1** |
| **2.** | What is the kube-controller-manager? | **2 Marks** | **L1** | **CO1** |
| **3.** | What is the kubelet in Kubernetes? | **2 Marks** | **L1** | **CO1** |
| **4.** | What is a Kubernetes deployment? | **2 Marks** | **L1** | **CO2** |
| **5.** | Explain ConfigMap in Kubernetes. | **2 Marks** | **L2** | **CO2** |
| **6.** | What is Secret in Kubernetes? | **2 Marks** | **L1** | **CO2** |
| **7.** | What is Kubernetes cluster autoscaling? | **2 Marks** | **L1** | **CO3** |
| **8.** | What is Kubernetes TLS (Transport Layer Security)? | **2 Marks** | **L1** | **CO3** |
| **9.** | What is Kubernetes Istio? | **2 Marks** | **L1** | **CO4** |
| **10.** | How would you monitor and log a Kubernetes cluster in a production environment? | **2 Marks** | **L3** | **CO4** |

## Part B

**Answer the Questions.** **Total Marks 80M**

| | | | | | |
|---|---|---|---|---|---|
| **11.** | **a.** | Explain the key components of container architecture. | **10 Marks** | **L2** | **CO1** |
| | | **Or** | | | |
| **12.** | **a.** | Explain Amazon ECS and Red Hat OpenShift in brief. | **10 Marks** | **L2** | **CO1** |
| **13.** | **a.** | Describe in detail how containers work. Explain their internal functioning and architecture with a neat labeled diagram. | **10 Marks** | **L2** | **CO1** |
| | | **Or** | | | |
| **14.** | **a.** | What is the use of Docker in DevOps? Explain its advantages and disadvantages. | **10 Marks** | **L2** | **CO1** |
| **15.** | **a.** | Write a short note on Deployment in Kubernetes. | **10 Marks** | **L2** | **CO2** |
| | | **Or** | | | |
| **16.** | **a.** | Explain in detail about Namespace in Kubernetes. | **10 Marks** | **L2** | **CO2** |
| **17.** | **a.** | Explain Deployment Strategies with respect to Kubernetes Deployment. | **10 Marks** | **L2** | **CO2** |
| | | **Or** | | | |
| **18.** | **a.** | Explain about Pod Networking in Kubernetes. | **10 Marks** | **L2** | **CO2** |
| **19.** | **a.** | Explain Kubernetes Load Balancer with a neat diagram. | **10 Marks** | **L2** | **CO3** |
| | | **Or** | | | |
| **20.** | **a.** | Explain TLS (Transport Layer Security). | **10 Marks** | **L2** | **CO3** |
| **21.** | **a.** | How do you create a Persistent Volume (PV) in Kubernetes? | **10 Marks** | **L3** | **CO3** |
| | | **Or** | | | |
| **22.** | **a.** | How do you create a StatefulSet in Kubernetes? | **10 Marks** | **L3** | **CO3** |
| **23.** | **a.** | Explain the concept and purpose of Resource Quotas in Kubernet | **10 Marks** | **L2** | **CO4** |
| | | **Or** | | | |
| **24.** | **a.** | Explain the Launch and Deploy a Helm Chart with Harness | **10 Marks** | **L3** | **CO4** |
| **25.** | **a.** | Write a short note on Istio's core feature | **10 Marks** | **L2** | **CO4** |
| | | **Or** | | | |
| **26.** | **a.** | Describe the workflow of CI and CD pipelines using Jenkins. | **10 Marks** | **L2** | **CO4** |