Name: **Enrolment No:**	

UPES

End Semester Examination, December 2023

Course: Container Orchestration & Infrastructure Automation **Semester: VII**

Program: B.Tech (CSE-H+NH)-All Spec. **Time : 03 hrs.**

Course Code: CSVT4013P **Max. Marks: 100**

Instructions: 1) All the questions are compulsory.

2) An internal choice has been provided in Question 9 and Question 11.

SECTION A

(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Discuss the key components of Docker and their respective roles in the containerization process.	**4**	**CO1**
Q 2	Explain the role of Docker in Continuous Integration (CI) pipelines.	**4**	**CO2**
Q 3	Describe how Docker containers are integrated into CI workflows and illustrate the benefits they provide in ensuring consistent and reliable builds.	**4**	**CO2**
Q 4	Define and differentiate between automation and orchestration in the context of IT operations and DevOps.	**4**	**CO3**
Q 5	Explain how the automation and orchestration are essential to optimize a specific process.	**4**	**CO4**
SECTION B **(4Qx10M= 40 Marks)**			
Q 6	Discuss the role of Orchestration-related tools in managing and scaling containerized applications.	**10**	**CO4**
Q 7	Explain how Docker contributes to containerization, and what benefits does it offer over traditional virtualization methods?	**10**	**CO1**
Q 8	Describe the architecture of Docker. Explain the role of Docker Engine, Docker Images, and Docker Containers in the context of creating and running applications.	**10**	**CO2**
Q 9	Discuss the differences between Docker volumes and Docker bind mounts. When would you use one over the other, and what are the advantages and limitations of each in managing persistent data? OR Elaborate on Docker networking. Explain the default networking behavior in Docker and the various networking modes available.	**10**	**CO1**

SECTION-C (2Qx20M=40 Marks)			
Q 10	Define each of these components and their individual roles in the software development lifecycle. a) Continuous Integration b) Continuous Delivery c) Cluster Management d) Cluster Scheduling	**20**	**CO3**
Q 11	Explain the concept of Containers as a Service (CaaS) as part of the wider Platform as a Service (PaaS) model, highlighting its advantages and key differences from other service models in orchestrating applications. OR Describe a scenario where a small development team is working on a web application. Explain how Docker containers can be used to streamline the development process, including version control, collaboration, and deployment.	**20**	**CO4**