

Roll No.																			
----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



**BENGALURU**  
**School of Information and Science**  
**Mid - Term Examinations - November 2024**

**Semester:** III

**Date:** 05-11-2024

**Course Code:** CSA4015

**Time:** 02.00pm to 03.30pm

**Course Name:** DevOps & Micro services

**Max Marks:** 50

**Program:** M C A

**Weightage:** 25%

**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.**

**5 Qx2M=10M**

- |   |   |         |    |     |
|---|---|---------|----|-----|
| 1 | What are the stages in DevOps life cycle?                       | 2 Marks | L1 | C01 |
| 2 | Distinguish between docker file and docker compose with example | 2 Marks | L1 | C02 |
| 3 | What is the purpose of orchestration of containers?             | 2 Marks | L1 | C01 |
| 4 | What are the benefits of DevOps over Waterfall?                 | 2 Marks | L1 | C01 |
| 5 | Why docker image is used? How to create a docker image?         | 2 Marks | L1 | C01 |

**Part B**

**Answer ALL Questions. Each question carries 10 marks.**

**4QX10M=40M**

- |     |  |         |    |     |
|-----|--|---------|----|-----|
| 6a. | Every service in a Microservice based application has at least a development and a production instance. Explain in detail. | 4 Marks | L2 | C01 |
| 6b. | Draw a Microservices architecture for a E-Library Application  | 4 Marks | L2 | C02 |
| 6c. | What is a service in Microservice architecture?  | 2 Marks | L2 | C01 |

**Or**

	<b>7a.</b>	What is DevOps, and how does it bridges the gap between development and operation teams?	4 Marks	L2	CO1
<b>7</b>	<b>7b.</b>	What are the challenges in Software Delivery. How Delivery impacts the business success?	4 Marks	L2	CO2
	<b>7c.</b>	What is CALMS model ?	2 Marks	L2	CO1
	<b>8a.</b>	Explain the concept of Continuous Integration in DevOps. How does it improve software development processes?	4 Marks	L2	CO1
<b>8</b>	<b>8b.</b>	How does the adoption of microservices solve scaling issues in modern applications?	4 Marks	L2	CO2
	<b>8c.</b>	What is the role of Docker in DevOps?	2 Marks	L2	CO1
<b>or</b>					
	<b>9a.</b>	Why is designing a Good API Important? What are the design guidelines for a good API?	6 Marks	L2	CO1
<b>9</b>	<b>9b.</b>	What are the API's required for a RetailStore to fetch the home page and to fetch the details a products.	2 Marks	L2	CO2
	<b>9c.</b>	Why Postman is used?	2 Marks	L2	CO1
	<b>10a.</b>	Write down the steps to Create Microservice "StudentMicroservice" using java with spring boot and MVC architecture.	3 Marks	L2	CO1
<b>10</b>	<b>10b.</b>	Explain the steps to add the "Mysql" Dependency in above project "StudentMicroservice". What is pom.xml	5 Marks	L2	CO2
	<b>10c.</b>	Define the need of Model, Controller, Service and Repository package in the above project.	2 Marks	L2	CO1
<b>or</b>					
	<b>11a.</b>	Given a project "StudentMicroservice" using java and springboot. What is the need of "maven clean" and "maven install". What is the role of "target" folder in this project.	5 Marks	L2	CO1
<b>11</b>	<b>11b.</b>	Discuss the steps to add a dockerFile here. And what should be its content.	3 Marks	L2	CO2
	<b>11c.</b>	Discuss the steps to add a dockerCompose.yml here. And what should be its content.	2 Marks	L2	CO1

	<b>12a.</b>	Explain Docker Architecture in details with various components?	4 Marks	L2	C01
<b>12</b>	<b>12b.</b>	Write a docker file for generating database (mysql) service image to run a monolithic application on the container.	2 Marks	L2	C02
	<b>12c.</b>	Create a docker-compose.yml for running frontend microservice which depends on two backend microservices , and the database services. Use separate database service for the above backend microservices. Use python for codebase.	4 Marks	L2	C01
	<b>or</b>				
	<b>13a.</b>	Explain Kubernetes Architecture in details with various components?	3 Marks	L2	C01
<b>13</b>	<b>13b.</b>	Create a kubernetes deployment file named mysql-deployment.yml for running MYSQL as a service on port 3306. Ensure that the deployment includes environment variables for initializing the root user and password.	3 Marks	L2	C02
	<b>13c.</b>	Write a kubernetes deployment YAML file for deploying "StudentService" with 2 replicas, exposing it on port 8080 and set resource requests and limits for CPU and memory.	4 Marks	L2	C01