



# Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri(West), Mumbai 400058-India  
(An Autonomous Institute Affiliated to University of Mumbai)

## End Semester Examination

**Max. Marks: 100**

**Class: FYMCA**

**Course Code: MC520**

**Course: DevOps**

**Duration: 3 Hrs**

**Semester: II**

**Date: 31/5/24**

**Time: 10 to 1**

### Instructions:

- (1) All Questions are Compulsory.
- (2) Draw neat diagrams.
- (3) Assume suitable data if necessary.

### Synoptic

No	Question	Max. Marks	CO	BL
Q1 A	<p>Illustrate DevOps stages with the help of an example. List which tool is required for each stage.</p> <p><b>Key Points:</b> DevOps stages diagram (2 marks) Detailed explanation of any 4 stages with tool example (2 marks each) Version Control (Git), Continuous Integration (Jenkins), Continuous Testing (Selenium), Containerization (Docker), Configuration Management (Ansible), Continuous Monitoring (Nagios)</p>	10	1	2
Q1 B	<p>Define the relation between Docker and Kubernetes. Describe how Kubernetes will be used for the company who aims to distribute the workloads with the help of trending technologies.</p> <p><b>Key Points:</b> Detailed explanation of relation between Docker and Kubernetes (4 marks) Scenario Solution which includes Container Orchestration, Scaling and Load balancing, Service discovery and Networking, Resource Optimization, Integration with trending technologies (6 marks)</p>	10	2	3
Q2 A	<p>Illustrate the components of a Docker Container with the help of an example.</p> <p><b>Key Points:</b> Explanation of Docker Client and Server with example (2.5 marks) Explanation of Docker Image with example (2.5 marks) Explanation of Docker Container with example (2.5 marks) Explanation of Docker Registry with example (2.5 marks)</p>	10	2	2
Q2 B	<p>Justify how manual testing is used over automation testing for the following scenario.</p> <p>Consider a website that requires a username, password and a captcha for the user to log in. Your colleague suggests that this test execution can be redirected to the manual testing team? Do you agree with them? If yes, why?</p> <p><b>Key Points:</b> Definition of Manual and Automation testing (2 marks) Scenario solution which includes selenium does not support captcha automation and also no bot should access sensitive information (8 marks)</p>	10	3	4



	<p style="text-align: center;"><b>OR</b></p> <p>A company is launching a new e-commerce website that will handle sensitive customer information such as credit card details and personal addresses. What security testing strategies would you employ to ensure the website is secure against potential threats?</p> <p><b>Key Points:</b>  Definition of Security Testing (2 marks)  Scenario solution which includes Vulnerability assessment and penetration testing, authentication and authorization testing, Data encryption testing, Input validation testing, session management testing (8 marks)</p>			
Q3 A	<p>Build the steps to create a Docker Image for a Python application. List and describe the commands used for the same.</p> <p><b>Key Points:</b>  Steps writing includes prepare the application code, write a Dockerfile, Specify base image, install dependencies, copy application code, set working directory (4 marks)  Commands used for creating an image (docker build -t my-python-app) and container (docker run -d -p 5000:5000 my-python-app)(6 marks)</p>	10	2	3
Q3 B	<p>Illustrate Git Workflow with the help of an example. List the commands used for each stage.</p> <p><b>Key Points:</b>  Diagram showing the workflow for both local and global repository (2 marks)  Detailed explanation of any 4 workflow which includes clone, pull, push, fetch and also working directory, staging area, local and global repository and its commands (2 marks each)</p>	10	1	2
Q4 A	<p>Illustrate the role of Cloud in DevOps.</p> <p><b>Key Points:</b>  Cloud definition (2 marks)  Explanation of how cloud is useful for DevOps (8 marks)</p>	10	4	2
Q4 B	<p>Describe the components of Ansible Playbook. Create a playbook in YAML to install Apache 2 package.</p> <p><b>Key Points:</b>  Explanation of components includes name, host, variables, task, handlers, roles (4 marks)  YAML for installing Apache 2 package (6 marks)</p> <pre> --- - name: Ansible playbook to install apache2 package   hosts: kslave1   become: yes   tasks:     - name: Install apache https package       apt:         name: apache2         state: present </pre>	10	1	3
Q5 A	<p>You are working as a DevOps Engineer in a company named ABC Pvt Ltd. You have been asked by your manager to create a Maven Project using Jenkins and build a war file of that project. As a proof of concept, you have</p>	10	1	3

	<p>been given a web application to build. Identify which steps would be required for the pipeline and design a delivery pipeline for the same.</p> <p><b>Key Points:</b> Identification of steps (2 marks) Building any 4 pipeline stages with example and plugins used (2 marks each)</p>			
Q5 B	<p>Explain how does NagiOS work?</p> <p><b>Key Points:</b> Architecture (4 marks) Detailed explanation of 3 components Scheduler, GUI and Plugins(6 marks)</p> <p style="text-align: center;"><b>OR</b></p> <p>An e-commerce platform experiences intermittent outages during peak shopping hours, leading to a loss in revenue. The IT team suspects that the issue might be related to database performance. How would you use Nagios to monitor database metrics and identify potential bottlenecks?</p> <p><b>Key Points:</b> Use of Nagios (2 marks) Scenario Solution includes steps like nagios installation, nagios plugins installation, define service check, monitor dashboard, troubleshooting and resolution (8 marks)</p>	10	4	2

