Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	**Semester**	6
Subject Code	PCIT-115	**Subject Title**	DevOps: S/w Architecture
Mid Semester Test (MST) No.	2	**Course Coordinator(s)**	Dr. Kamaljit Kaur and pf. Himani Sharma
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	22 April, 2024 (Monday)	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Define persistent storage. Explain its types.	CO2, L1	2
Q2	How do containers communicate within Docker?	CO6, L2	2
Q3	Demonstrate the utilization of Jenkins for project building and integration with Git repositories.	CO6, L4	4
Q4	Describe the distinctions between docker containers and virtual machines as well as their impact on contemporary software development methodologies. Include relevant examples to illustrate your points.	CO4, L5	4
Q5	Comprehensively explain the jenkin pipeline and elaborate on the concept of a multibranch pipeline.	CO6, L2	4
Q6	What is Docker and what steps are involved in creating, stopping and removing a container? Provide detailed elaborations with corresponding commands.	CO6, L5	8

Course Outcomes (CO)

Students will be able to

1	Contrast the various drivers accountable for the surfacing of DevOps
2	Restate the service delivery process and business benefits
3	Illustration of most common and popular DevOps tools
4	Assessment of critical success factors for DevOps implementation
5	Evaluations of the results with GIT, GITHUB, Jenkins and Dockers
6	Integration of GITS, Dockers and Jenkins

RBT Classification	**Lower Order Thinking Levels (LOTS)**	**Higher Order Thinking Levels (HOTS)**				
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	**Semester**	6
Subject Code	PCIT-115	**Subject Title**	DevOps: S/w Architecture
Mid Semester Test (MST) No.	I	**Course Coordinator(s)**	Dr. Kamaljit Kaur and Pf. Himani Sharma
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	12 Feb, 2024	**Roll Number**	2107514

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Enlist four significant DevOps tools and phases.	CO3, L2	2
Q2	Justify the utility of GIT and Github.	CO5, L5	2
Q3	Illustrate various steps involved for moving the process from working to staging area and the concept of unstaging.	CO1, L2	4
Q4	Explain the concept of "Immutable Infrastructure" and its benefits in a DevOps environment. How does it differ from traditional infrastructure management?	CO4, L3	4
Q5	Compare and contrast continuous integration, continuous delivery, and continuous deployment. How do they contribute to the DevOps pipeline?	CO2, L5	4
Q6	Discuss branching? Why it is required? How to create remote branches and branches from existing ones? Share two examples.	CO5, L5	8

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Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

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Subject Code	PCIT-115	**Subject Title**	DevOps: S/w Architecture
Mid Semester Test (MST) No.	2	**Course Coordinator(s)**	Dr. Kamaljit Kaur and pf. Himani Sharma
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	22 April, 2024 (Monday)	**Roll Number**	2121030

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Define persistent storage. Explain its types.	CO2, L1	2
Q2	How do containers communicate within Docker?	CO6, L2	2
Q3	Demonstrate the utilization of Jenkins for project building and integration with Git repositories.	CO6, L4	4
Q4	Describe the distinctions between docker containers and virtual machines as well as their impact on contemporary software development methodologies. Include relevant examples to illustrate your points.	CO4, L5	4
Q5	Comprehensively explain the jenkin pipeline and elaborate on the concept of a multibranch pipeline.	CO6, L2	4
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Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
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Subject Code	PCIT-115	**Subject Title**	DevOps: S/w Architecture
Mid Semester Test (MST) No.	1	**Course Coordinator(s)**	Dr. Kamaljit Kaur and Pf. Himani Sharma
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	12 Feb, 2024	**Roll Number**	2121030

Note: Attempt all questions

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Guru Nanak Dev Engineering College, Ludhiana
Department of Information Technology

Program	B.Tech.(IT)	**Semester**	6
Subject Code	PCIT-115	**Subject Title**	Devops: Software Architecture
Mid Semester Test (MST) No.	1	**Course Coordinator(s)**	Dr. Kamaljit Kaur and Er. Harjot Kaur
Max. Marks	24	**Time Duration**	1 Hour 30 minutes
Date of MST	25th March, 2023	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Mar
Q1	Explain the function of git config command.	CO5, L2	2
Q2	How to view the commit history in GIT?	CO3, L1	2
Q3	Compare and contrast continuous integration with continuous deployment.	CO1, L3	4
Q4	Explain the working directory and staging area with example.	CO3 L2	4
Q5	Illustrate the concept of branching strategy in git. Also explain its working with master branch and the HEAD.	CO5, L4	4
Q6	Discuss the concept of devops in detail. Explain its working. Also explain the various devops tools in detail.	CO2, L5	8

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Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	**Semester**	6
Subject Code	PCIT-115	**Subject Title**	DevOps: S/w Architecture
Mid Semester Test (MST) No.	2	**Course Coordinator(s)**	Dr. Kamaljit Kaur and Pf. Harjot Kaur
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	25 May, 2023 (Thursday)	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Write any two major differences between virtualization and containerization.	CO5, L2	2
Q2	Discuss the usage of hypervisor .	CO4, L1	2
Q3	How does AWS contribute to DevOps? Enlist atleast two tools used for it.	CO6, L3	4
Q4	Illustrate the concept of Jenkins architecture with the help of diagram.	CO3, L4	4
Q5	Explain Jenkins Pipeline. Illustrate the steps used to demostrate how Jenkin is used to build projects.	CO5, L4	4
Q6	Discuss the various steps used in docker container life cycle. Explain the concepts of docker compose, docker file and docker image in detail. Write the commands to start, stop and kill a container.	CO6, L5	8

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Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

[Total No. of Questions: 09] [Total No. of Pages: 2]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)
Semester: 6th
Name of Subject: DevOps: Software Architecture
Subject Code: PCIT-115
Paper ID: 17207

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) What are docker images and docker containers?
b) List various Devops Tools and their corresponding phases.
c) What is the difference between staged and unstaged resources?
d) How do Git and GitHub contribute to the software development process?
e) Differentiate between containerization and virtualization.
f) Differentiate between continuous delivery and continuous deployment.

Part – B **[Marks: 04 each]**

Q2. What is the GIT commit lifecycle, and what are its main stages?

Q3. What is Jenkins pipeline? Explain the multibranch pipeline.

Q4. How DevOps uses key aspects of Agile Methodology in software development. (Justify with a suitable diagram and example)

Q5. What do you know about pulling and pushing repositories? Compare and explain them in detail.

Q6. What is docker? How can you create your first container?

Q7. Elaborate implementation of DevOps with an example.

Part – C

[Marks: 12 each]

Q8. a) Describe the essential components and architecture of Jenkins, highlighting how it enables automation and scalability in software development.

b) Explain the process of configuring Jenkins and how they help in building projects?

OR

Describe the Docker architecture. Also, discuss the various steps used in the docker container life cycle and how to stop and remove containers in Docker.

Q9. Explain the GIT installation steps. How does working with the Bourne Again Shell (BASH) contribute to command-line interaction and scripting in Unix-like environments?

OR

What is the purpose of GIT clone? How to clone the repository to system? Write the workflow of branching and merging with suitable examples.

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Please check that this question paper contains __9__ questions and __2__ printed pages within first ten

[Total No. of Questions: 09] [Total No. of Pages: 2]
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Program: B.Tech. (Batch 2018 onward)
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Name of Subject: DevOps: Software Architecture
Subject Code: PCIT-115
Paper ID: 17207
Scientific calculator is Allowed/NotAllowed

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Part – A **[Marks: 02 each]**

Q1.

a) How can you stop a running Docker container? Why should you remove unused Docker containers?

b) Describe the primary function of Jenkins in the DevOps toolchain.

c) Illustrate the benefits of version control system.

d) Explain the benefits of using containerization.

e) Explain how Continuous Integration helps improve software quality.

f) Describe the difference between git fetch and git pull.

Part – B **[Marks: 04 each]**

Q2. List and briefly describe four popular DevOps tools and their primary functions.

Q3. Differentiate between containerization and virtualization. Explain the steps to create and run your first Docker container using the **hello- world** image.

Q4. Explain the basic workflow of using Git from creating a repository to pushing changes to a remote repository.

Q5. Describe the process of linking Jenkins to a Git repository.

Q6. Illustrate the concept of branching strategy in git. Also explain its working with master branch and the HEAD.

Q7. Compare and contrast continuous integration with continuous deployment.

Part – C **[Marks: 12 each]**

Q8. Illustrate the concept of DevOps. Explain how it works? Also explain various DevOps tools in detail.

OR

Design a simple Git workflow for a small project team. Include the steps for creating branches, committing changes and merging branches into the main branch.

Q9. Compare and contrast the process and benefits of creating Docker images versus using containers. Also describe the layers of a Docker image and their significance. Explain in detail the process of pulling a Docker image from Docker Hub and pushing a locally created Docker image to your Docker Hub repository. Include the specific commands.

OR

Illustrate the concept of using Jenkins in details and also explain the initial setup process for Jenkins, including installation and configuration. Discuss how Jenkins can be used to automate the build process of a software project. Also Describe the process of linking Jenkins to a Git repository.

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Part – B **[Marks: 04 each]**

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