



Date: 5.06.2025	Test - 2	Max. Marks: 50+10
Semester: VI	UG	Duration: 1 $\frac{1}{2}$ Hrs + $\frac{1}{2}$ Hr
Course Title: CLOUD COMPUTING TECHNOLOGY & ARCHITECTURES		Course Code: AI364TA


Department of Artificial Intelligence and Machine Learning

Note: Answer all the Questions

Q. No	Questions	M	BT	CO
1	What are Type 1 and Type 2 Hypervisors?	2M	1	1
a)	How the Containerization improve efficiency during CI/CD process ?	1M	1	2
b)	List any 2 benefits of Version Control Systems(Git) in the software development process ?	2M	1	1
c)	Which type of cloud deployment would you choose for hosting a startup's web application to minimize infrastructure costs and why?	1M	2	3
d)	A group of healthcare organizations wants to collaborate on patient data analysis while ensuring compliance with strict data privacy regulations. Which cloud deployment model is most suitable and why?	1M	2	3
e)	Give any two benefits of community cloud ?	2M	1	1
f)	Identify the services which help AWS to distribute traffic across multiple EC2 instances?	1M	2	3
g)				

Note: Answer all the Questions

Q. No	Questions	M	BT	CO
	<p>Your organization currently uses a traditional monolithic web application that includes the following modules:</p> <ul style="list-style-type: none">• Authentication• Product Catalog• Orders• Payments <p>You have been assigned the task of modernizing this application by restructuring it into a microservices-based architecture using Docker containers and implementing a CI/CD pipeline for automated testing and deployment.</p> <p>Refer to the below diagram which shows the current monolithic structure.</p>	10 M	3	3

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	<div> <div> Using diagrams (wherever applicable) and brief explanations, answer the following: <ol style="list-style-type: none"> How can the monolithic application be logically decomposed into microservices? How are Docker containers used to package and isolate each microservice? How do the services interact, manage configuration, and access their respective databases? How does a CI/CD pipeline support the development, testing, and deployment of Dockerized microservices? What are the benefits of using Docker-based microservices compared to the monolithic architecture? </div> <div> <div>Monolithic Architecture (Current)</div> <div> <div>Web Application</div> <div> <div>AuthenticationProduct Catalog</div> <div>OrdersPayments</div> <div>Shared Database & Codebase</div> </div> </div> </div> </div>
3.a	<div> <div>An organization is frequently releasing updates to their customer-facing mobile app and backend services hosted on the cloud. They are facing challenges like delayed feedback on bugs, inconsistent deployment environments, and increased downtime during updates. Explain how adopting CI/CD principles can help address these challenges. Illustrate your answer with a real-world scenario involving automated testing, environment consistency, and smooth deployment.</div> <div>6 M33</div> </div>
3.b	<div> <div>Explain private cloud with hardware and software stacks ?</div> <div>4M23</div> </div>
4.a	<div> <div>Give a view of Community cloud overview</div> <div>4M23</div> </div>
4.b	<div> <div>Discuss the cloud reference model Architecture.</div> <div>6M</div> </div>
5.a	<div> <div>A startup company wants to launch a new mobile application and is considering using Platform as a Service (PaaS) instead of setting up its infrastructure. How PaaS can help the startup in terms of: Application development process Cost efficiency, Scalability and maintenance</div> <div>5 M32</div> </div>
5.b	<div> <div>Describe about Xen Paravirtualization</div> <div>5 M21</div> </div>
6.a	<div> <div>Discuss the architecture of Microsoft Hyper-V.</div> <div>6M23</div> </div>
6.b	<div> <div>What are the challenges of data-intensive computing?</div> <div>4M11</div> </div>