Department of Artificial Intelligence and Machine Learning

Course Code:	: AI254TA	Date	: 08.01.25
Semester	: V	Time	: 2.00-4.00
Max Marks	: 60	Duration	: 120 mins

Machine Learning Operations (MLOps)

CIE 2

Note: Answer all the Questions

SL. No		Questions	M	BT	CO
		PART – A			
1		Give any two features of Clear ML	2	1	3
2		What is one hot encoding	2	1	1
3		"Transfer learning is a powerful technique in machine learning where a model developed for one task is reused as the starting point for a model on a second task". Justify this statement with a real time application of transfer learning	2	2	2
4		Give any two needs for feature selection	2	1	1
5		What are two key factors to consider when managing interactions between models in MLOPs	2	2	2
		PART – B			
1	A	"Hyperparameters are critical elements in configuring machine learning algorithms". Justify the statement with an example	5	2	5
	B	Elaborate the different challenges faced by the ML algorithms in MLOPS.	5	2	2
2	A	What the need for version management and reproducibility in developing a machine learning model. Give examples	6	2	2
	B	Debate any two the challenges in choosing evaluation metrics when comparing different models for ML Model. Give examples to justify the answer.	4	2	2
3	a	XYZ bank has a machine learning model predicting fraudulent transactions, but deployment and monitoring processes are manual and error-prone. This leads to: 1. Delays in releasing new model versions. 2. Lack of visibility into model performance post-deployment. 3. Limited automation in the pipeline. The goal is to implement an MLOps pipeline to automate the deployment process, monitor performance, and enable faster iterations. (i) List the various MLOPs tools that can be used to implement the pipe line.	10	3	3

RV College of Engineering®

Department of Artificial Intelligence and Machine Learning

			M	BT	CO
		(ii) Identify and justify the tool you would prefer to deploy the model			
		Elaborate in detail how do you implement MLOPs pipeline with reference quality assurance and testing during production.			
4	A	Paraphrase the statement "runtime environments can have a big effect on deployment of ML Deployment and Production" with reference to adaptation of runtime environment from development to production.	6	3	2
	B	Discuss the need of reproducibility and auditability in building a MLOPs pipeline	4	2	5
5	A	With a relevant example determine the attack and vulnerability that can affect an ML Model?	6	2	2
	B	Consider the scenario in Q3. If you were an MLOps engineer, how would you address a situation where a model behaves unexpectedly in production?	4	3	2

M-Marks, BT-Blooms Taxonomy Levels, CO-Course Outcomes

	Particulars	CO1	CO2	CO3	CO4	CO5	L1	L2	L3	L4	L5	L6
Marks Distribution	Max Marks Part A	4	4	2			6	4				
	Max Marks Part B		27	14		9		34	16			

Course Outcomes: After completing the course, the students will be able to:-

CO1	Identify and apply various ML-Ops techniques to deploy machine learning models for real-world problems.
CO2	Design, deploy and evaluate Machine Learning models, follow the operational practices to benefit society, science, and industry.
CO3	Use modern tools and techniques to organize ML model from development to production for real world problems
CO4	Demonstrate effective communication through team presentations and reports to analyse the impact of the standard MLOPs practices on industry and society.
CO5	Conduct performance evaluation, design, deploy models in par with the appropriate Governance for the benefit of the industry and society.