JHARKHAND Rai University RANCHI

End Semester/Reappear (Semester III) Examination December, 2024

Programme: MCA

Course: Basics of Machine Learning **Full Marks: 70**

Course Code:3CITE304 **Time: 3 Hrs.**

Enrolment no. _____

Q. No.	Questions	CO	Bloom Taxonomy Category	Marks
	Section I			
1	**Short Answer type questions**			**4 x 5 = 20**
a	Define a model. Also differentiate between training data and testing data.	CO2	Understand	
	or			
	Differentiate between supervised and unsupervised learning with one example of each.	CO2	Understand	
b	Explain Linear Regression in machine learning and also state its types.	CO3	Remember	
	or			
	Define classification. List various classification algorithms.	CO3	Understand	
c	Describe decision tree in machine learning with an example.	CO2	Understand	
	or			
	List of different metrics used to construct a decision tree.	CO2	Understand	
d	Sketch the applications of Machine learning in computer vision.	CO4	Remember	
	or			
	Explain appropriate problem for Neural Network Learning with its characteristics.	CO4	Understand	
	Section II			
Long Answer type questions				**3 x 10 = 30**
2	Explain the capabilities and limitation of ID3 algorithm.	CO2	Understand	
	or			
	Write short notes on: a) Underfitting b) Multicollinearity c) Overfillting d) Outliers	CO2	Remember	
3	Illustrate the brief introduction to ML applications in computer vision, speech and natural language processing.	CO5	Analyze	
	or			
	Explain random forest algorithm. Compare the performance of random forest over decision tree.	CO5	Apply	
4	Describe the logistic regression model. How is it different from linear regression, and what kind of problems is it suited for?	CO1	Remember	
	or			
	Illustrate the procedure for the computation of the Principal Components of a given data**.**	CO1	Analyze	

Section III

Application based questions

5

Assess a student's performance during his course of study and predict whether a student will get a job offer or not in his final year of the course. The training dataset T consists of 10 data instances with attributes such as CGPA, instructiveness, practical knowledge and communication skill as shown in table below. The target class attribute is the "Job Offer".

Sl. No.	CGPA	Instructiveness	Practical Knowledge	Communication Skills	Job Offer
1	>=9	Yes	Very Good	Good	Yes
2	>=8	No	Good	Moderate	Yes
3	>=9	No	Average	Poor	No
4	<8	No	Average	Good	No
5	>=8	Yes	Good	Moderate	Yes
6	>=9	Yes	Good	Moderate	Yes
7	<8	Yes	Good	Moderate	No
8	>=9	No	Very Good	Good	Yes
9	>=8	Yes	Good	Good	Yes
10	>=8	Yes	Average	Good	Yes

CO4 | Evaluate | **1 x 20 = 20**

or

a. Explain K-nearest Neighbour learning Algorithm for continues valued target function.
b. Define Perceptron. Explain the working of a perceptron with a neat diagram.

CO4 | Analyze

COURSE OUTCOME

At the end the course the candidate will able to

CO1: Formulate machine learning problems corresponding to different applications: data, model selection, model complexity

CO2: Demonstrate understanding of a range of machine learning algorithms along with their strengths and weaknesses

CO3: Implement machine learning solutions to classification, regression, and clustering problems

CO4: Design and implement various machine learning algorithms in a range of real-world applications

CO5: Evaluate and analyze the performance of a machine learning algorithm or a system based on machine learning