Name:

**Enrolment No:** 



## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022

Programme Name:B Tech (AM&NT/MECHANICAL/MECHATRONICS)Course Name: Applied Machine LearningTime: 03 hrsCourse Code: MECH 2040Nos. of page(s): 2

Semester : III

Max. Marks: 100

SECTION A ALL QUESTIONS ARE COMPULSORY.					
S. No.		Marks	CO		
Q 1	Explain Logistic Regression with its mathematical form.	4	2		
Q 2	Explain learning processes of machines with or without supervision.	4	1		
Q 3	Explain about R-squared (multiple and adjusted), confusion matric and precision.	4	2		
Q 4	Describe any two useful applications of machine learning.	4	1		
Q 5	Explain the conditions to reject null hypothesis as well as to accept alternative hypothesis through <i>p</i> -value and slope.	4	2		
	SECTION B				
	ALL QUESTIONS ARE COMPULSORY. ATTEMPT ANY ONE FROM	Q6			
Q 6	Explain the usefulness of following python libraries with their python syntax:				
	a. keras				

	a. keras		
	b. tensor		
	c. scipy	10	2
	d. OpenCV	10	4
	e. matplotlib		
	OR		
	Explain HSV/HSL and its all four components.		
Q 7	Explain five benefits of neural network.	10	2

Q 8	Explain about lossless and lossy Compression.	10	3
Q 9	Explain neural model and their equations, and components with model diagram.	10	3
	SECTION-C		
	ALL QUESTIONS ARE COMPULSORY. ATTEMPT ANY ONE FROM Q	10	
Q 10	Build python code to convert HSV to RGB from scratch.		
	OR	20	3
	Build Image classification model using CNN on 28X28 image		
	I. Answer following questions based on model summary analysis shown in Fig. 1: a. Name the list of predictors, response and number of observations used for		
Q 11	generating model' summary in Fig. 2 (2)		
	b. Is the given formula belong to simple or multiple linear regression? Explain		
	your observations? (4)		
	c. Is there any relationship between predictor and responses? Why or why not?		
	(2)		
	d. Determine the strength of relationship between the predictor and the response	• •	
	and how? (6)	20	
	e. Which type of relationship (either positive or negative) you observed between		
	the predictor and the response? (6)		
	OLS Regression Results		2,3
	Dep. Variable: Sales R-squared: 0.897		
	Model: OLS Adj. R-squared: 0.896		
	Method: Least Squares F-statistic: 570.3   Date: Wed, 14 Sep 2022 Prob (F-statistic): 1.58e-96		
	Time: 11:57:02 Log-Likelihood: -386.18		
	No. Observations: 200 AIC: 780.4		
	Df Residuals: 196 BIC: 793.6		
	Df Model: 3		
	Covariance Type: nonrobust		
	coef std err t P> t  [0.025 0.975]   Intercept 2.9389 0.312 9.422 0.000 2.324 3.554		
	TV 0.0458 0.001 32.809 0.000 0.043 0.049		
	Radio 0.1885 0.009 21.893 0.000 0.172 0.206		
	Newspaper -0.0010 0.006 -0.177 0.860 -0.013 0.011		