

MCA Sem.-2 (Rep) Examination

Maching Learning

January-2025

Time : 3-00 Hours]

[Max. Marks : 50

Instructions:

- Write both the Sections in the separate answer book.
- Both Sections having equal weightage.
- Draw Diagrams wherever necessary.
- Make Assumptions wherever necessary.

SECTION – I

- Q.1 A scientist is investigating whether birds of prey exposed to pollutants lay eggs with thinner shells. A random sample of eggs from six nests is chosen and examined for polluted level p and thinning t of the shell. The results obtained are presented in the following table: [09]

p	3	8	30	25	15	12
t	1	3	9	10	5	6

- (a) Draw a scatter diagram.
- (b) Find the regression line of t on p of the form $t = a + b p$.
- (c) Plot (average p , average t) and regression line on the scatter diagram.
- (d) The scientist concludes from similar other researches that pollutant level above 18 is likely to result in the death of a chick soon after hatching. Estimate minimum thickness of its shell that is likely to result in the death of a chick.

OR

- Q.1 **Attempt the following:** [09]
- (a) Explain the concept of linear regression model. Why is it not used for classification problems?
 - (b) Explain Gradient Descent Method for optimization.

- Q.2 Explain Random Forest algorithm in detail. Explain in brief Weighted Averaging technique used in ensemble learning. [08]

OR

- Q.2 Explain in brief types of Decision Tree and give appropriate examples. Write algorithm steps for creating Decision Tree. [08]

(P.T.O)