Nirma University

Institute of Technology

Sessional Examination, October-2023

B. Tech. Electronics and Instrumentation Engineering, Semester – VII

2ICOE03 - Pattern Recognition and Image Analysis

Roll / Exam No.		Supervisor's initial With date	

Time: 2 Hours   Max. Marks: 50

Instructions: 1. Attempt all questions.
2. Figure to right indicate full marks.
3. Assume suitable data if required.

Q.1 (A) **CO1,L2** What is Image histogram? Explain with suitable example. Discuss histogram equalization algorithm with suitable applications. **(10)**

Q.2 (A) **CO2,L3** Discuss the basic architecture of convolution neural networks. **(10)**

(B) **CO2,L3** Discuss following region based shape descriptor along with suitable example:
(1) Euler number   (2) Elongatedness **(08)**

Q.3 (A) **CO3,L3** Discuss the working of Gradient Descent algorithm. Discuss the effect of parameter learning rate (α) on Gradient Descent algorithm. **(10)**

(B) **CO3,L3** Discuss the creation of non-linear decision boundary by hypothesis function in case of Logistic regression algorithm? Discuss with suitable example. How can we use Logistic regression algorithm for multiclass classification? Explain with suitable example. **(12)**