K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Nov – Dec 2025	
(B. Tech) Program: AI - DS Scheme IIB	
Regular: TY Semester:V	
Course Code: AIDLC 5052 and Course Name: Image and Video Processing	
Date of Exam: 28/11/2025 Duration: 2.5 Hours Max. Marks: 60	

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any **two** questions out of three: (05 marks each)	10		
a)	Write a short note on Motion Estimation		6	U
b)	Write a short note on different scan patterns of video signals		5	U
c)	Can two different images have the same histogram? Justify the answer.		2	U
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	What are the three types of discontinuity in digital image?		3	U
b)	Define Spatial and Intensity resolutions. Suggest ways to improve these resolutions.		1	U
c)	Compare Arithmetic coding and Huffman coding		4	U
Q.3	Solve any **two** questions out of three. (10 marks each)	20		

a)	Discuss image smoothing with the following:
	   I) Low pass spatial filtering
	   II) Median filtering.
			2	U

b)	Write a short note on different image file formats		1	U
c)	Explain the process of Dilation and Erosion with an example		3	U
Q.4	Solve any **two** questions out of three. (10 marks each:	20		
a)	Perform histogram equalization on the following image histogram and plot original and equalized histograms.		2	Ap

Seat No.:

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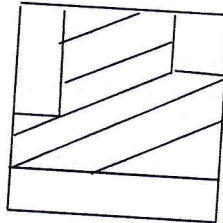Duration: 2.5 Hours
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Gray Level	0	1	2	3	4	5	6	7
Number of pixels	550	300	0	0	0	200	325	225

b)	Perform region splitting and merging on the 4 x 4 image segment shown below. Draw the quad tree. Briefly explain the method used.	4	Ap
c)	For the given image block, apply Huffman Encoding to achieve Image Compression.	5	Ap

7	3	3	3
3	3	3	3
1	1	2	2
1	1	1	1

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