Total No. of Printed Pages: 2

PRN No.	

PAPER CODE	U313-215-B-E315

December 2023 (ENDSEM) EXAM

TY B.TECH. (SEMESTER - I) ADUA31205-B

COURSE NAME: Image Processing **Branch: AI&DS** **COURSE CODE:** [illegible]

(PATTERN 2020)

Time: [1Hr. 30 Min] **[Max. Marks: 40]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **All questions are compulsory. Solve any one sub question from Question 3 and any two sub questions each from Questions 4,5 and 6 respectively.**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Compute $N_4(111)$ for following Image : 101 102 103 104 105 106 104 108 109 110 111 112 113 114 115 116	[2]	CO1	Apply
Q.2	a) Why color image processing is required ?	[2]	CO2	Analyze
Q.3	a) Elaborate Exponential Noise & Periodic Noise. b) Elaborate Gaussian Noise & Impulse Noise.	[6] [6]	CO3 CO3	Understand Understand
Q.4	a) Let's say we have an image with the following pixel values and their frequencies. Original image had pixel values [100, 100, 150, 200, 100, 250, 150, 100, 200, 100] Write the representation of original image after Human Coding. Pixel Value | Frequency 100 | 15 150 | 07 200 | 10 250 | 03 b) Encode the message "A2A1A3" by Arithmetic Coding Compression Technique. Symbol | PDF A1 | 0.3 A2 | 0.3 A3 | 0.4	[5] [5]	CO4 CO4	Apply Apply

	c) Apply LZW Compression on following 3*3, 8-bit Image and write encoded output image and compression ratio. <table><tr><td>126</td><td>39</td><td>39</td></tr><tr><td>126</td><td>39</td><td>39</td></tr><tr><td>126</td><td>39</td><td>39</td></tr></table>	[5]	CO4	Apply
Q.5	a) Elaborate Dilation operation, Consider any Image and Apply Dilation operation on it and show the updated image.	[5]	CO5	Apply
	b) Elaborate Erosion operation, Consider any Image and Apply Erosion operation on it and show the updated image.	[5]	CO5	Apply
	c)Write steps of Canny Edge Detection Method.	[5]	CO5	Understand
Q.6	a) Elaborate Pattern and Pattern Classes.	[5]	CO6	Understand
	b) Explain Structural Method.	[5]	CO5	Understand
	c) Elaborate use of Neural Network for Object Identification.	[5]	CO5	Understand