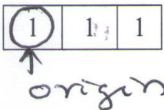


May-June 2024	
(B.Tech) Program: Electronics & Telecommunication Engineering	
Regular/Examination: TY/ Semester: VI	
Course Code:EXC603	Course Name: Image Processing and Machine Vision
Duration: 2.5 Hours	Max. Marks: 60

Instructions:		Max. Marks	CO	BT level																
(1) All questions are compulsory. (2) Draw neat diagrams wherever applicable. (3) Assume suitable data, if necessary.																				
Q 1	Solve any six questions out of eight:	12																		
i)	Explain image resolution. Mention different types.	2	1	U																
ii)	Apply thresholding on the given image when $T=3$ <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr><td>2</td><td>0</td><td>3</td><td>4</td></tr> <tr><td>7</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>5</td><td>2</td><td>0</td><td>1</td></tr> </table>	2	0	3	4	7	3	4	5	6	1	2	3	5	2	0	1	2	2	Ap
2	0	3	4																	
7	3	4	5																	
6	1	2	3																	
5	2	0	1																	
iii)	The equalized histogram of an image is not perfectly uniform. State whether the statement is true or false and justify your answer	2	2	U																
iv)	What are regional descriptors? List them.	2	5	U																
v)	What is Hit & Miss transform, Mention its use.	2	3	U																
vi)	What are mean filters? List the mean filters used for image restoration	2	4	U																
vii)	What is LOG filter? Mention its advantage	2	4	U																
viii)	What is unsupervised classification? Mention its application.	2	6	U																
Q.2	Solve any four questions out of six.	16																		
i)	Explain the concept of sampling and quantization in digital image processing	4	1	U																
ii)	Apply averaging filter on the given image assuming zero padding <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>2</td></tr> <tr><td>4</td><td>2</td><td>5</td><td>1</td></tr> <tr><td>1</td><td>2</td><td>6</td><td>3</td></tr> <tr><td>2</td><td>4</td><td>6</td><td>7</td></tr> </table>	1	2	3	2	4	2	5	1	1	2	6	3	2	4	6	7	4	2	Ap
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4	2	5	1																	
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iii)	Explain Hit – Miss transform with an example	4	3	Ap																

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iv)	With a neat block diagram, explain the image restoration model.	4	4	U																									
v)	Compare supervised and unsupervised classification with an example. Explain their advantages and disadvantages	4	6	U																									
vi)	Discuss the Fourier descriptor with an example	4	5	Ap																									
Q.3	Solve any two questions out of three	16																											
i)	Explain the connectivity, adjacency and distance measures between the neighborhood of pixels	8	1	U																									
ii)	Perform opening and closing on the following image using the structuring element <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td></tr> </table> 	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	8	3	Ap
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0	0	1	0	0																									
0	0	0	1	0																									
0	0	0	0	1																									
iii)	What is knowledge representation? Explain different types.	8	6	U																									
Q.4	Solve any two questions out of three.	16																											
i)	Explain all the three methods of boundary description using minimum perimeter polygon technique.	8	5	U																									
ii)	Explain the different methods of estimating degrading function for image restoration	8	4	U																									
iii)	For the following image find the i) Gray level slicing with and without back ground $r_1=2$ and $r_2=5$ ii) Contrast stretching when $r_1=3$, $R_2=5$, $s_1=2$, $s_2=6$ <table border="1" style="display: inline-table; margin-left: 20px;"> <tr><td>4</td><td>3</td><td>2</td><td>1</td></tr> <tr><td>3</td><td>1</td><td>2</td><td>4</td></tr> <tr><td>5</td><td>1</td><td>6</td><td>2</td></tr> <tr><td>2</td><td>3</td><td>5</td><td>6</td></tr> </table>	4	3	2	1	3	1	2	4	5	1	6	2	2	3	5	6	8	2	Ap									
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