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**Department of Research & Development**  
**Mid - Term Examinations - SEPTEMBER 2024**

<b>Odd Semester:</b> Ph.D. Course Work	<b>Date:</b> 28 /09/2024
<b>Course Code:</b> CSE5017	<b>Time:</b> 2:00pm – 3:30pm
<b>Course Name:</b> Machine Vision	<b>Max Marks:</b> 50
<b>Department:</b> CSE	<b>Weightage:</b> 25%

**Instructions:**

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

**Part A**

<b>Answer ALL the Questions. Each question carries 5 marks.</b>		<b>4Qx5M=20M</b>																									
<b>1</b>	<b>Discuss in detail about image acquisition system.</b>	<b>5 Marks</b>																									
<b>2</b>	<b>Explain the sampling and quantization of images with the help of a suitable diagram.</b>	<b>5 Marks</b>																									
<b>3</b>	<b>Distinguish between smoothing and sharpening filters</b>	<b>5 Marks</b>																									
<b>4</b>	<p><b>An image segment is shown below. Let, V be the set of gray level values used to define connectivity in the image. Compute D4, D8 and Dm distances between pixels 'p' and 'q' for: (i) V = {2,3} (ii) V = {2,6}</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>2(p)</td><td>3</td><td>2</td><td>6</td><td>1</td></tr> <tr><td>6</td><td>2</td><td>3</td><td>6</td><td>2</td></tr> <tr><td>5</td><td>3</td><td>2</td><td>3</td><td>5</td></tr> <tr><td>2</td><td>4</td><td>3</td><td>5</td><td>2</td></tr> <tr><td>4</td><td>5</td><td>2</td><td>3</td><td>6(q)</td></tr> </table>	2(p)	3	2	6	1	6	2	3	6	2	5	3	2	3	5	2	4	3	5	2	4	5	2	3	6(q)	<b>5 Marks</b>
2(p)	3	2	6	1																							
6	2	3	6	2																							
5	3	2	3	5																							
2	4	3	5	2																							
4	5	2	3	6(q)																							

**Part B**

<b>Answer ALL Questions. Each question carries 15 marks.</b>		<b>2QX15M=30M</b>
<b>5</b>	<b>Explain Various key stages in Digital Image Processing with suitable diagram.</b>	<b>15 Marks</b>
<b>6</b>	<b>Describe various Image Segmentation techniques and its application in details.</b>	<b>15 Marks</b>