Register No.															

FACULTY OF ENGINEERING & TECHNOLOGY, SRM UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Cycle Test – I/Evaluation form
Academic Year: 2017-2018

Program offered: B.Tech (CSE) **Year / Sem : II/III**

Max. Marks: 50 **Duration : 2 Periods**

Date of Exam : 30-08-2017

Course Code and Title: 15CS325E/Digital Image Processing

PURPOSE	To acquire knowledge about the procedure of digital image data acquisition, processing, analysis, and their application

INSTRUCTIONAL OBJECTIVES		**STUDENTOUTCOMES**						
Attheend ofthecourse,studentwillbeable								
1.	Understand the digital image fundamentals	a						
2.	Improve their ability in image enhancement and restoration	a	e					

At the end of the course, the student will be able to:

a. An ability to understand basics of Image Processing Techniques
e. An ability to apply fundamental knowledge of image processing techniques

Question No.	**Reference to IO**	**Reference to Outcome**	**Marks Allotted (Total 50)**	**Marks Scored**	**Outcomes Met Yes / No**
1.	1	a	4		
2.	1	a	4		
3.	2	a, e	4		
4.	2	a, e	4		
5.	1	a	4		
6.	1	a	15		
7.	2	a, e	15		
TOTAL					

Faculty Name:

Signature:

Register No.															

FACULTY OF ENGINEERING AND TECHNOLOGY, SRM UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Cycle Test – I/Question paper
Academic Year: 2017-2018

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SET – A2

PART A

Answer **ALL Q**uestions **5*4=20 Marks**

Sl. No.	Question	Course Outcome	Bloom's Taxonomy	Marks
1.	(i) What is the technique used in tasks such as zooming, shrinking, rotating, etc.? (ii) Validate the statement: "For a given image in one-dimension given by function f(x, y), to sample the function we take equally spaced samples, superimposed on the function, along a horizontal line. However, the sample values still span (vertically) a continuous range of gray-level values. So, to convert the given function into a digital function, the gray-level values must be divided into various discrete levels." a) True b) False	a a	Comprehension Analysis	2 2
2.	What is meant by "False contouring" and "Checkerboard Effect"?	a	Comprehension	4
3.	Perform Histogram equalization for an 8x8 image shown. Image gray level distribution is given in the table below. Grey Levels: 0 1 2 3 4 5 6 7 No of Pixels: 0 1 2 2 1 2 6 2	a, e	Application	4
4.	List out 4 filters that can be used to reconstruct an image only in the presence of noise? What is the filter that can be used to remove either salt or pepper noise, but not both simultaneously?	a, e	Comprehension and Knowledge	4
5.	Define alpha trimmed mean filter. Mention the Filter suitable for the removal of combination of salt and pepper and Gaussian noise.	a	Knowledge and Comprehension	4

PART B

Answer **(Either-O**R) Questions **2*15=30 Marks**

<table>
<tr><th>Sl. No</th><th>Question</th><th>Course Outcome</th><th>Bloom's Taxonomy</th><th>Marks</th></tr>
<tr><td>6. a.(i)</td><td>Draw the block diagram of fundamental steps in Digital Image Processing and explain any four blocks.</td><td>a</td><td>Comprehension</td><td>8</td></tr>
<tr><td>(ii)</td><td>Obtain Histogram matching for the table given below.

<table>
<tr><td>r_k</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>$P_r(r_k)$</td><td>0.19</td><td>0.25</td><td>0.21</td><td>0.16</td><td>0.08</td><td>0.06</td><td>0.03</td><td>0.02</td></tr>
<tr><td>$P_z(z_k)$</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.15</td><td>0.20</td><td>0.30</td><td>0.20</td><td>0.15</td></tr>
</table>
(OR)</td><td>e</td><td>Evaluation</td><td>7</td></tr>
<tr><td>b. (i)</td><td>Write in brief about the process of Image Acquisition by sensors.</td><td>a</td><td>Comprehension</td><td>9</td></tr>
<tr><td>(ii)</td><td>Consider the image segment shown below. Let V={0,1}. Calculate Euclidean Distance, D_4 and D_8, distance between two pixels p and q.

(q) 1 1 2 3
0 2 2 1
1 1 0 2
2 1 1 1 (p)</td><td>e</td><td>Analysis</td><td>6</td></tr>
<tr><td>7. a.(i)</td><td>Describe the following noise probability density function with its equation and neat graph
i) Gaussian Noise
ii) Uniform Noise
iii) Salt-and-pepper noise
iv) Gamma Noise</td><td>a</td><td>Comprehension</td><td>8</td></tr>
<tr><td>(ii)</td><td>Discuss about any three Basic Intensity Transformation Functions.
(OR)</td><td>a</td><td>Comprehension</td><td>7</td></tr>
<tr><td>b. (i)</td><td>What are the Spatial Domain Filters used for sharpening? Explain each filter with its equation.</td><td>a, e</td><td>Knowledge and Comprehension</td><td>10</td></tr>
<tr><td>(ii)</td><td>List out the Frequency Domain Filters used for smoothing?</td><td>a, e</td><td>Comprehension and Application</td><td>5</td></tr>
</table>