

**B.Tech. – VIEP – COMPUTER SCIENCE AND
ENGINEERING (BTCSVI)**

00394 Term-End Examination

June, 2014

BICS-024 : DIGITAL IMAGE PROCESSING

Time : 3 hours

Maximum Marks : 70

Note : Attempt any **seven** questions. All questions carry equal marks.

1. Draw the diagram and explain the various components of an Image Processing system. Discuss some of its major applications. 5+5
2. Write short notes on the following : $4 \times 2 \frac{1}{2}$
 - (a) Power Law Transform
 - (b) Contrast Stretching
 - (c) Bit Plane Slicing
 - (d) Sampling
3. What is meant by histogram ? Compare between contrast stretching and histogram equalization. Equalize the following histogram and give the resultant histogram. 2+2+6

Gray levels (r_k)	0	1	2	3	4	5	6	7
No. of pixels (p_k)	50	100	100	300	200	200	50	0

4. Explain the basis of filtering in frequency domain. Differentiate between Low-pass filter and High-pass filter. 4+6
5. What do you mean by Image Restoration ? Explain the Degradation model in detail. Discuss the Minimum Mean-square Error approach of Restoration. 2+4+4
6. What do you mean by Colour Space ? Classify them and describe CMY Colour Model. 10
7. Explain Dilation and Erosion with example. Prove that Erosion and Dilation are Dual Transformations. 3+3+4
8. What do you mean by Registration ? Explain in brief the Geometrical transformation. 5+5
9. Explain the process of image segmentation using : 4+3+3
- (a) Region Growing
 - (b) Region Splitting
 - (c) Region Merging
10. Write short notes on the following : 4+3+3
- (a) Feature Extraction
 - (b) Clustering
 - (c) Graph Matching
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