B.E. (Electronics Engineering) Seventh Semester (C.B.S.)

Elective – I: Digital Image Processing

P. Pages: 2	1 (0.000) (0.000 0.000) (0.000)	TKN/KS/16/7534		
Γime : Three Hours		Max. Marks: 80		

Notes: 1.

- All questions carry marks as indicated.
- 2. Solve Question 1 OR Questions No. 2.
- Solve Question 3 OR Questions No. 4. 3.
- 4. Solve Question 5 OR Questions No. 6.
- Solve Question 7 OR Questions No. 8. 5.
- Solve Question 9 OR Questions No. 10. 6.
- Solve Question 11 OR Questions No. 12. 7.
- Due credit will be given to neatness and adequate dimensions. 8.
- 9. Assume suitable data whenever necessary.
- 10. Illustrate your answers whenever necessary with the help of neat sketches.
- 1. Explain the need of Sampling and Quantization, how it is implemented in Digital image a) processing.
 - Consider the image segment shown ut $V = \{1, 2\}$, compute the length of shortest 4-, 8- & b) m – path between 'p' and 'q'. If particular path does not exists between there points explain why?

OR

- Explain the image Acquisition Methods. 2. a)
 - Differentiate Spatial and Gray level resolution. b)
- The Gray level histogram of an image is given below. 3. a)

Gray Level	0	1	2	3	4	5	6	7
Frequency	400	700	1350	2500	3000	1500	550	0

Compute the gray level histogram of the output image obtained by enhancing the i/p by histogram equalization Technique.

What is histogram matching explain with example. b)

6

8

5

8

5

8

OR

- Explain smoothening can be achieved in time domain for image enhancement. 4. a)
- 8

Explain Arithmetic and logical operations between images. b)

6

5. a) Obtain the 4 – length DCT for the discrete time sequence $u(n) = \{1, 3, -2, 4\}$

6

7

b) Explain the slant transform, derive its 4×4 matrix and prove that it is read and orthogonal.

OR

6. a) Explain Haar transform and derive its 4×4 matrix.

7

b) Explain the properties of Hadamard transform.

6

7. a) Explain the various types of data redundancies in an uncompressed image.

6

b) Write a short notes on Huffman coding with example.

7

OR

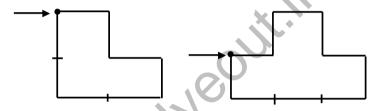
8. a) Explain LZW process of compression.



b) Write short notes on Bit plane compression technique.

6 7

9. a) Find the chain code and shape numbers of the images given in fig. below also find the order of shape number. Assume 4 – connectivity.



b) Describe a point detection method for detection of isolated points in an image.

7

OR

10. a) Find out signature of each of following.

7

i) Circle

- ii) Square
- iii) equilateral triangle.

7

b) Use a hough transform to find a straight line given data points are (0, 1), (1, 1), (2, 2) & (3, 3)

6

a) Explain image degradation model.

7

b) Explain Inverse Filtering.

•

OR

12. a) Explain Image restoration in presence of noise in spatial domain.

7

b) Explain wiener filtering.

6

11.