

Total No. of Questions : 8]

SEAT No. :

**P1880**

**[4859]-1073**

[Total No. of Pages : 2

**B.E. (Computer Engineering)**

**IMAGE PROCESSING**

**(2012 Course) (410444 A) (End Sem) (Elective - I) (Semester - I)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*
- 2) Neat diagram should be drawn wherever necessary.*
- 3) Use of electronic pocket calculator is allowed.*
- 4) Assume suitable data, if necessary.*

- Q1)** a) Explain elements of image processing in detail. [6]
- b) Explain the method of contrast stretching using histogram equalization. [8]
- c) With the help of appropriate mask explain the following: [6]
- i) Point detection.
  - ii) Line detection.
  - iii) Edge detection.

OR

- Q2)** a) Define Digital Image. Explain different types of digital image. What is mean by sampling and quantization? [8]
- b) Explain first derivative and second derivative method of detecting edges in the image. [6]
- c) Explain region split and merge technique with example and draw its quad tree representation. [6]
- Q3)** a) What is the need for Image compression? Explain redundancy in images. Explain. [8]
- b) Define feature and pattern. Explain in brief relationship between image processing and object recognition. [8]

OR

**P.T.O.**

- Q4)** a) Explain any two object recognition method. [8]
- b) For the image shown below, compute the degree of compression that can be achieved using Huffman coding of pixel values. [8]

$$\begin{bmatrix} 3 & 3 & 3 & 2 \\ 2 & 3 & 3 & 3 \\ 3 & 2 & 2 & 2 \\ 2 & 1 & 1 & 0 \end{bmatrix}$$

- Q5)** a) What are the medical Imaging modalities? Explain in brief. [10]
- b) Explain picture archives and communication systems (PACS). [8]

OR

- Q6)** Write a short note on any three: [18]
- a) Images from X-rays and its application.
- b) Images from r-rays.
- c) Does and risk.
- d) Ultrasound

- Q7)** a) Explain remote sensing process and state advantages and limitation of remote sensing? [8]
- b) Explain in brief elements of visual image interpretation? How these elements help us to interpret remote sensing imagery? [8]

OR

- Q8)** Write short note on any two: [16]
- a) Coordinate system for photogrammetry.
- b) Photogrammetric Imaging devices.
- c) Radargrammetry and Radar Interferometry.

