

Total No. of Questions : 12]

SEAT No. :

P3831

[5561]-252

[Total No. of Pages : 3

B.E. (Electronics and Telecommunication Engineering)

DIGITAL IMAGE PROCESSING

(2012 Course) (Elective-I) (Semester - I) (404184A)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data, if necessary.
- 4) Use of electronic pocket calculator is allowed.

- Q1)** a) Explain spatial and gray level resolution in image processing. [3]
b) What is the significance of Hue, saturation and Intensity in HSI color model? [3]

OR

- Q2)** a) Explain Euclidean, city block and chess board distance metrics with formula. [3]
b) Explain image Histogram? State its applications. [3]
- Q3)** a) Explain image restoration using inverse filtering. [4]
b) Compare image enhancement in spatial domain and frequency domain. [3]

OR

- Q4)** a) Explain image enhancement in frequency domain using block schematic. [3]
b) Perform histogram equalization of an image. [4]

$$I = \begin{bmatrix} 4 & 4 & 4 & 4 & 4 \\ 3 & 4 & 5 & 4 & 3 \\ 3 & 5 & 5 & 5 & 3 \\ 3 & 4 & 5 & 4 & 3 \\ 4 & 4 & 4 & 4 & 4 \end{bmatrix}$$

P.T.O.

Q5) a) Determine DCT coefficient of 2×2 image given below.

$$\text{Image} = \begin{bmatrix} 25 & 12 \\ 20 & 02 \end{bmatrix} \quad [4]$$

b) Define Redundancy, compression ratio and relative redundancy. [3]

OR

Q6) a) Explain Wavelet based image compression technique. [4]

b) Explain how bit plane coding is used in image compression. [3]

Q7) a) What is the difference between first order and second order derivative in edge detection? Explain LoG and Canny edge detection in detail. [9]

b) Define morphology. Explain Hit-Miss transform in morphological image processing. [9]

OR

Q8) a) Explain following with proper mask. [9]

i) Point Detection

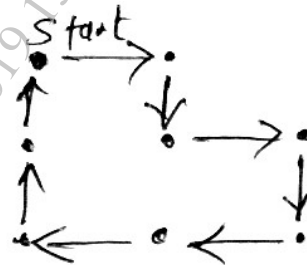
ii) Line Detection

iii) Edge Detection

b) Explain Region Splitting and Region Merging method in region based segmentation. In which situation, split and merge technique is used? Explain. [9]

Q9) a) What is the significance of statistical moments? Explain first order and second order moments in detail. [8]

b) Explain 4-chain code and 8 chain code in detail. Also find the shape number and order of the given boundary using & chain code. [8]



OR

Q10)a) Explain Fourier Descriptor in detail. [8]

b) Explain the signature and polygon approximation for boundary description. [8]

Q11)a) What are the different types of classification algorithms? Explain any one in detail. [8]

b) Write a short note on any one medical application using image processing. [8]

OR

Q12)a) Explain with block diagram content based image retrieval in image processing. [8]

b) What are pattern and pattern classes? How to represent pattern classes. [8]

