

Total No. of Questions : 12]

SEAT No. :

P2267

[Total No. of Pages : 3

[5254]-604

B.E. (E & TC)

DIGITAL IMAGE PROCESSING

(2012 Pattern) (Elective - I)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right indicate full marks.
- 3) Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 4) Assume Suitable data, if necessary.

- Q1)** a) What is meant by histogram? Can two different images have same histogram? Justify your answer. [4]
- b) List any two colorspace with their applications. [2]

OR

- Q2)** a) What is quantization? How does it affect gray level resolution in images? [4]
- b) List any two point processing operations. Perform image addition of following 8 - bit images. [2]

$$A = \begin{bmatrix} 10 & 69 \\ 70 & 125 \end{bmatrix} \quad B = \begin{bmatrix} 25 & 26 \\ 20 & 155 \end{bmatrix}$$

- Q3)** a) Write short note on log transformation. [4]
- b) What is gamma correction? Write its application. [3]

P.T.O.

OR

- Q4)** a) Write the equation for 2D DFT. Describe steps used in frequency domain filtering. [4]  
b) Explain inverse filtering with one example. [3]

- Q5)** a) List types of redundancies in images. Explain any two. [4]  
b) Write any three properties of wavelet transform that are useful in compression. [3]

OR

- Q6)** a) Explain Run length coding with one example. [4]  
b) List standards used for image compression and video compression. Draw block diagram of image compression standard. [3]

- Q7)** a) Draw and explain mask used for point detection and prewitt edge detection. [9]  
b) Explain image segmentation using [9]  
i) Region growing  
ii) Region splitting and merging

OR

- Q8)** a) Explain algorithm of Hit or Miss transform. Write its application. [9]  
b) What is meant by morphological operations? Explain any two operations in detail. [9]

- Q9)** a) What are the chain codes? Draw shape for following chain codes. [8]  
i) 2, 2, 4, 4, 6, 6, 0, 0.  
ii) 1, 1, 7, 7, 4, 4.  
b) Explain the concept of image representation. Describe signature used in representation with one example. [8]

OR

**Q10)a)** Write short note on : [8]

- i) Fourier descriptor
- ii) Texture descriptor

**b)** Write short note on : [8]

- i) Shape number
- ii) Statistical moments

**Q11)a)** What are the different features used in object recognition? Explain how feature extraction is useful in classification. [8]

**b)** Explain character recognition system. Explain how classifiers are useful in this application. [8]

OR

**Q12)a)** Describe patterns and pattern classes. [8]

**b)** Explain minimum distance classifiers and correlation based classifiers. [8]

