

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]

