

Total No. of Questions : 12]

SEAT No. :

**P3605**

[Total No. of Pages : 3

**[4959] - 1084**  
**B.E. (E & TC)**  
**Digital Image Processing**  
**(2012 Pattern) (Elective - I(a))**

*Time :2.30 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) You are advised to attempt not more than 6 questions.*
- 4) Your answer will be valued as a whole.*
- 5) Assume suitable data, if necessary.*
- 6) Use of logarithmic table slide rule, mollier charts electronic pocket calculator is allowed.*

- Q1)** a) Explain scaling, rotation & translation operation of an image. [3]  
b) Explain the effect of image sampling & quantization. [4]

OR

- Q2)** a) What is the need of image file format? Explain any one file format in detail. [4]  
b) Explain Image formation in Human visual system in detail. [3]

- Q3)** Explain any two in detail. [7]  
a) Homomorphic filtering.  
b) Median filtering.  
c) Log transformation.

OR

- Q4)** a) Explain restoration of images using Inverse filtering. [4]  
b) Explain spatial domain image sharpening in detail. [3]

**P.T.O.**

- Q5)** a) What is loss - less & lossy compression? Explain need & application of each. [3]  
b) Explain wavelet based compression in detail. [3]

OR

- Q6)** a) Explain concept of MPEG encoder. [3]  
b) Explain Huffman coding algorithm in detail. [3]

- Q7)** a) Explain any two in detail. [10]

i) LOG

ii) DOG

iii) Canny Edge detector

- b) What is skeleton? Explain the algorithm to obtain skeleton of an object in a digital image. [8]

OR

- Q8)** a) Explain basic operations of morphology & hence explain hit or miss transform & its application. [10]

- b) Explain Global & local thresholding in image segmentation. [8]

- Q9)** a) What is chain code? How it is obtained? Obtain the object shape represented by 8 - directional chain code 466001225642. Obtain the circular chain code for the same. [8]

- b) Explain how polygonal approximation and signatures are used for shape representation? [8]

OR

- Q10)** a) What is moments? Explain different statistical moments used for shape representation. [8]

- b) What is Texture & texture primitive? What are the different properties of texture used for region representation? [8]

- Q11)** a) Explain pattern & different types of pattern classes. Explain representation of pattern classes. [8]
- b) Explain the algorithm of character recognition in image processing. [8]

OR

- Q12)** a) Explain Bayes classifier in detail. [8]
- b) Explain biometric authentication using image processing. consider any biometric e.g. finger, face etc. & explain in detail feature extraction & matching process. [8]

