H Roll No. .....

TCS–713/TCS–703

B. TECH. (CSE)
(SEVENTH SEMESTER)
END SEMESTER EXAMINATION, 2018

DIGITAL IMAGE PROCESSING

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains *five* questions.

(ii) All questions are compulsory.

(iii) Instructions on how to attempt a question are mentioned against it.

(iv) Total marks assigned to each question are **twenty**.

1. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)

   (a) Explain digital image processing with the help of block diagram.

   (b) What are the various applications of Digital Image Processing ? Explain in detail.

   (c) Explain different types of Images.

2. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)
   (a) Explain Various Image file format in detail.
   (b) Apply Discrete Fourier transform to the following sequence and verify whether it works :
   $$x = \{1\ 2\ 8\ 9\}$$
   (c) Write short notes on the following :
      (i) Image Compression
      (ii) Image Restoration
      (iii) Image Enhancement
      (iv) Smoothing and sharpening
3. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)
   (a) Explain the concept of spatial filtering.
   (b) Is there any advantage of frequency domain filters over spatial filters ? Why ?
   (c) Explain Visual Perception in detail.
4. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)
   (a) What are different compression algorithms and its types ?

   (b) Calculate the Huffman coding for the set of symbols shown below :

Symbols	A	B	C	D
Probability	0.4	0.3	0.2	0.1

   (c) What is the difference between and lossless and lossy compression schemes ?
5. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)
   (a) Explain various colour models in detail.
   (b) What is segmentation in colour image processing ?
   (c) How to convert a colour image to a grey scale and vice versa ?