OR

(b) (i) Explain the model of Image degradation or restoration.

(ii) Why is image enhancement process so important for any automated decision-making system. List out the mathematical function for available linear image transformation method.

(CO2)

H   Roll No. ....

TCS–691

B. TECH. (CSE) (SIXTH SEMESTER) MID SEMESTER EXAMINATION, April, 2023
IMAGE PROCESSING AND COMPUTER VISION

Time : 1½ Hours
Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) What do you mean by Pixel ? Give detailed description of benefit and relationship of pixel in image processing. Explain the relationship of pixel with CCD array.   (CO1)

OR

(b) Explain the fundamental steps in Digital Image Processing and the components of the Digital Image Processing system.

(CO1)

P. T. O.

2. (a) Given a grey scale image on paper whose physical dimension in 2.5 inch × 2.5 inch, scanned at the rate of 150 dpi. Then calculate (i) How many bits are required to represent the image, (ii) How much time is required to transmit the image if the modem is 28 kbps, (iii) Estimate these two values if it were a binary image. (CO1)

OR

(b) Write short note on the following : (CO1)
   (i) Low Level Vision, Mid Level Vision and High Level Vision
   (ii) Some libraries in python used in image processing.

3. (a) Apply histogram stretching transformation on 8 × 8, eight grey level grey image, the grey-level distribution of which is given as : (CO2)

Grey Level (r_k)	No. of pixel (n_k)
0	0
1	1
2	5
3	20
4	19
5	14
6	5
7	0

OR

(b) What do you mean by Edge Detection ? Explain its importance in Image Processing. (CO2)

4. (a) Suppose that the continuous intensity value in an image have the PDF Function :

$$p_r(r) = \begin{cases} \dfrac{2r}{(L-1)^2}, & \text{for } 0 \leq r \leq L-1 \\ 0, & \text{otherwise} \end{cases}$$

Then calculate $p_s(s)$ for the above given function. (CO2)

OR

(b) Derive the $p_s(s)$ for the given continuous valued image using image histogram equalization process. (CO2)

5. (a) Perform histogram equalization for the following image : (CO2)

1	2	3	4
5	5	6	6
6	7	6	6
6	7	2	3