

Dy Registrar ————— Penname's Daul

46 31/5/2023

Roll No.

National Institute of Technology, Hamirpur
B.Tech End Sem Examination

Branch/Semester: CSE
Subject Code: CS-323
Subject: Digital Image Processing

Semester: 6th
Duration: 3 Hrs
Max. Marks :50

Instructions: All questions are compulsory and carry equal marks.

Assume data suitably, if required and not available within the question.

- Q1. A common measure of transmission for digital data is the baud rate, defined as the number of bits transmitted per second. Generally, transmission is accomplished in packets consisting of a start bit, a byte(8 bits) of transformation and a stop bit.
Using above facts, answer the following:
- (a) How many minutes would it take to transmit a $1024 * 1024$ image with 256 gray levels using a 56k baud modem?
 - (b) What would be the time be at 750k baud, representative speed of a phone DSL(digital subscriber line) connection?
- Q2. Suppose that a digital image is subjected to histogram equalization. Show that a second pass of histogram equalization will produce exactly the same result as the first pass.
- Q3. Give a single intensity transformation function for spreading the intensities of an image so the lowest intensity is 0 and the highest is $L - 1$.
- Q4. Consider an 8-pixel line of intensity data, 5108, 139, 135, 244, 172, 173, 56, 996. If it is uniformly quantized with 4-bit accuracy, compute the rms error and rms signal-to-noise ratios for the quantized data.
- Q5. Answer the following:
- (a) Define Digital image.
 - (b) What is dynamic range and Brightness?
 - (c) What do you mean by Grey level?
 - (d) Explain Grey level interpolation.
 - (e) Justify the statement "Brightness discrimination is poor at low level of illumination"
- Q6. Explain the process of image acquisition.
- Q7. What are the disadvantages of local processing technique for edge linking? In the Hough transform, What is the problem with using the line equation $y=ax+b$ for mapping to ab -plane (parameter space).
- Q8. Explain the Properties of 2D discrete Fourier Transform.
- Q9. Explain the different Noise Distribution in detail.
- Q10. Briefly explain the purpose of thresholding in image segmentation and Region based segmentation algorithms.