RAJ KUMAR GOEL INSTITUTE OF TECHNOLOGY & MANAGEMENT, GZB

1st Sessional Examination 2017-18 (Odd Semester)

Roll No.: **Subject Name: DIP**

Year/Branch: **4/ EC** **Subject Code: NEC 032**

Max Time: 1Hours 30 Minute **Max Marks: 50**

SECTION-A

Q.1 Attempt all parts carry equal marks. Write answer of each part in short. (2x5=10)

a) Define an Image with spatial coordinates.
b) Enlist some major application of Image Processing.
c) Calculate the image storage requirement for 1024X1024 binary image?
d) Appraise pixelization error?
e) Discuss the need for file formats.

SECTION-B

Note: Attempt any five questions from this section. (5x5=25)

Q.2 Summarise the concept of digital image processing components with block diagram.
Q.3 Find a matrix to perform following transformations to an object:
(i) Scale in x-direction by a factor 10.
(ii) Followed by rotation along x axis by 30 degree.
Q.4 Prove that image rotation and translation are not commutative operations.
Q.5 Discuss various file formats with their application.
Q.6 What do you mean by Shearing? Give the transformation matrix and its inverse to carry out shearing in both x and y direction.
Q.7(a) Differentiate 8-connectivity and m-connectivity. **(b)** What is the need for interpolation?
Q.8 Classify the images based on attributes, colours and data types.
Q.9 What is the effect of poor quantization? Discuss the quantizers in image processing.

SECTION-C

Note: Attempt any two questions from this section. (7.5x2=15)

Q.10 Compare & Contrast RGB, Gray Scale & Binary Image.
Q.11 Discuss digital Halftone process. Consider the image $F = \begin{pmatrix} 2 & 1 \\ 1 & 3 \end{pmatrix}$ apply linear interpolation to get the processed image.
Q.12 Consider an image point [2,2]. Perform the following operation and show the result of the transform.
1. Translate the image right by 3 units.
2. Perform scaling operation in both x & y direction by 3 unit.
3. Rotate the image by 45 degree.