MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VI Semester B.Tech Computer Science and Engineering

GRADE IMPROVEMENT/MAKE UP EXAMINATIONS, AUG 2021

SUBJECT: DIGITAL IMAGE PROCESSING (Program Elective II, CSE4052)

(12-08-2021)

Time: 2 Hours MAX. MARKS: 40

Instructions to Candidates:

Answer **Any FOUR FULL** questions

1A.	Briefly describe the application of X-rays in medical diagnostics and the two approaches of X-ray imaging.	**4M**
1B.	Along with a diagram, explain the fundamental Steps in Digital Image Processing through a block diagram.	**6M**
2A.	Explain the image formation in human eye with a diagram. Which cells are responsible for the bright light?	**6M**
2B.	List the different resolutions spoken in digital image processing. Give example for each of the resolutions	**4M**
3A.	What is the difference between the path and connectivity between two pixels in a digital image? Explain along with an example.	**5M**
3B	Along with a diagram, explain power law transformation and write the pseudocode to implement this formula.	**5M**
4A.	Compute the equalized intensities using histogram equalization for the following histogram of a gray scale image	**6M**

r_k	n_k
$r_0 = 0$	790
$r_1 = 1$	1023
$r_2 = 2$	850
$r_3 = 3$	656
$r_4 = 4$	329
$r_5 = 5$	245
$r_6 = 6$	122
$r_7 = 7$	81

4B. Explain the erosion operator logic in morphological image processing **4M**

5A. Explain the basic tool for shape detection in image processing **5M**

5B. What is the role of morphological gradient operator and how it works? Draw the output of this operator on following image. **5M**

6A Derive the Fourier series equation from the complex number. Explain each step **6M**

6B Write the equation of Fourier Transform in polar coordinate and its spectrum and phase angle. **4M**