K. J. Somaiya College of Engineering, Mumbai-77

(Autonomous College Affiliated to University of Mumbai)

Semester: Jan 2022 - May 2022

Max. Marks: 30 **Duration: 1 hr. 15 min.**

Class: TYBTECH Semester: VI

Branch: COMP Course Code: **2UCC601**

Name of the Course: Digital Signal and Image Processing

Question No.		Max. Marks
1	a) Find the signal given below is periodic or aperiodic $y(n) = \sin\left(\frac{2\pi}{7}n^2\right)$ b) Find even and odd components of the given discrete time signal. x(n) = {-1, 2, 3, 4, -1, 2, - 2,1, 3) ↑	8M
2	Test whether following systems are linear or nonlinear a) y(n) = 2nx(n) b) $y(n) = e^{x(n)}$ **OR** Test following systems for time invariance a) y(n) = x(n) + x(n+1) b) y(n)= 4nx(n)	6M
3	Perform following point processing operations on the digital image 3 bits/pixel image given below. a) Gray level slicing with and without background Given $r_1 = 3$ and $r_2 = 5$ and r must be following the range as $r_1 <= r <= r_2$. Consider slicing extreme levels as 0 and 7. b) Bit plane slicing 2 4 5 7 6 5 7 0 1 3 0 4	8M

4	Explain **any two** of the following spatial enhancement techniques with suitable example and state one application of each. a) Contrast stretching b) Averaging filter in spatial domain c) Log Transformation	8M