P P SAVANI UNIVERSITY

5th Semester of B. Tech. Examination

December 2022

SECE3060 Image Processing with Python

22.11.2022, Tuesday **Time: 10:00 a.m. To 12:30 p.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1	Define Following Terms (Any Five)	**[05]**	**CO**	**BTL**
(i)	Pixel		**1**	**4**
(ii)	Brightness		**1**	**4**
(iii)	Binary Image		**1**	**4**
(iv)	Harmonics		**1**	**4**
(v)	Pepper Noise		**2**	**4**
(vi)	Butterworth		**2**	**4**
(vii)	White Noise		**2**	**4**
Q - 2 (a)	Explain high frequency component and low frequency component in image in detail.	**[05]**	**3**	**5**
Q - 2 (b)	Explain band pass filter in detail.	**[05]**	**3**	**5**
	OR			
Q - 2 (a)	Explain Histogram processing in detail.	**[05]**	**3**	**3**
Q - 2 (b)	Explain in detail- how median filters work in spatial domain.	**[05]**	**2**	**3**
Q - 3 (a)	Explain Ideal High pass filters in detail. Explain its disadvantage as well.	**[05]**	**3**	**5**
Q - 3 (b)	Explain High pass Gaussian filters in detail.	**[05]**	**3**	**1**
	OR			
Q - 3 (a)	Explain difference between Fourier series and Fourier transform in detail.	**[05]**	**1**	**1**
Q - 3 (b)	Define noise: also discuss different types of noises in detail.	**[05]**	**1**	**5**
Q - 4	Attempt any One.	**[05]**		
(i)	Explain min/max/median filter in detail with example		**1**	**2**
(ii)	What is inverse filtering? Explain in detail.		**1**	**1**

SECTION – II

Q - 1	Define following Terms (Any Five)	**[05]**		
(i)	Color Model		**2**	**4**
(ii)	Erosion		**2**	**4**
(iii)	Arithmetic Coding		**1**	**4**
(iv)	LZW Coding		**2**	**4**
(v)	Dilation		**2**	**4**
(vi)	Hough transform		**1**	**4**
(vii)	CMYK model		**1**	**4**
Q - 2 (a)	Explain Intensity Slicing in detail with application example.	**[05]**	**2**	**2**
Q - 2 (b)	Explain HIS color model in detail.	**[05]**	**2**	**1**
	OR			

Q - 2 (a)	Explain RGB color space in detail.	**[05]**	**1**	**5**
Q - 2 (b)	Explain pseudo color image processing in detail.	**[05]**	**2**	**5**
Q - 3 (a)	Explain Opening Morphological Operations in detail.	**[05]**	**3**	**5**
Q - 3 (b)	What is Line and Edge detection?	**[05]**	**2**	**1**
	OR			
Q - 3 (a)	Explain Closing Morphological Operations in detail.	**[05]**	**3**	**4**
Q - 3 (b)	What is Boundary Detection?	**[05]**	**3**	**1**
Q - 4	Attempt any One.	**[05]**		
(i)	Explain in detail- color image smoothing.		**3**	**5**
(ii)	Explain in detail- color image sharpening.		**3**	**5**

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CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create