UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: B.Tech CSE GG   **Semester: VI**
Program: Digital Image Processing   **Time 03 hrs.**
Course Code: GIEG 323   **Max. Marks: 100**

SECTION A

S. No.		Marks	CO
Q 1	Differentiate between image restoration and image enhancement.	**4**	**CO1**

Q 2	Describe the following two properties of 2D-DFT:
	   a) Convolution
	   b) Correlation
		4	**CO5**

Q 3	Explain image smoothing using ideal lowpass filters and Butterworth lowpass Filters.	**4**	**CO3**
Q 4	Assess gradient of an image.	**4**	**CO3**
Q 5	Explain laplacian of Gaussian.	**4**	**CO5**

SECTION B

Q 6	Outline Haar Transform? Write the procedure to determine the Haar transformation matrix	**10**	**CO4**
Q 7	With relevant mathematical expressions, explain how a Wiener filter achieves Restoration of a given degraded image.	**10**	**CO1**
Q 8	Prove that erosion and dilation are dual to each other.	**10**	**CO4**
Q 9	Explain Run Length coding with an example OR Illustrate Hough transform with examples.	**10**	**CO3**

SECTION-C

Q 11	a) Describe the various requirements for multi-resolution analysis? Explain. b) Draw the functional block diagram of image compression system and explain the purpose of each block.	**20**	**CO4** **CO5**

Q 12	a) Explain the following morphological algorithms
	     • Thinning
	     • Thickening
	 b) Explain edge linking using Hough transform algorithm.
	
	 OR
		20	**CO2**
			 CO4
			 CO5

	a) With necessary figures, explain the opening and closing operations.		
	b) Discuss region-based segmentation with example.		