२/41

1306E481

Candidate's Seat No : _____

M.Sc. AIML & AIML (DS) Semester 2 Examination

Computer Vision

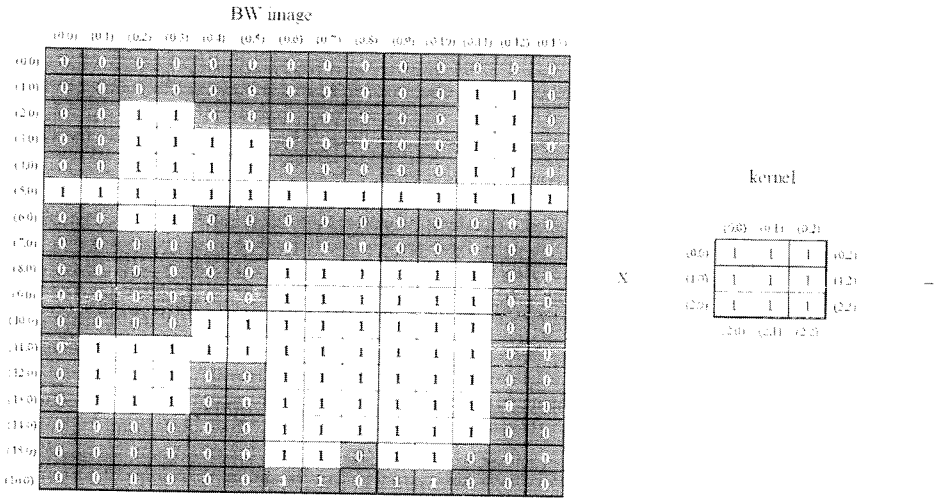
June-2024

Time : 3-00 Hours] [Max. Marks : 100

	SECTION I	
Q1.(a)	Define the following **(ANY SIX):** i. Region ii. Boundary iii. Spatial resolution iv. Segmentation v. Neighbours vi. Structural element vii. Gradient	[09]
Q1.(b)	Draw diagram to illustrate components of computer vision system. Explain various applications of computer vision using different bands of Electro Magnetic Spectrum	[09]
Q2.(a)	How k-means can be used for image compression ?	[08]
Q2(b)	Explain histogram of image. Draw histogram for a blurr image, dark image, bright image and a balanced contrast image	[08]
	OR	
Q2.(a)	Explain different types of edges. Write effects and convolution masks for following filters: i. Robert ii. Prewitt iii. Sobel **iv.** Canny	[08]
Q2.(b)	What is advantage of bit plane slicing? What is the use of gray level slicing? Can u do segmentation using gray level slicing?	[08]
Q3.	Define segmentation. Explain the following with examples: i. Region based and boundary based segmentation ii. Region based and boundary based approach	[16]

P.T.O

E451-2

	iii. Structural and stochastic segmentation iv. Simple and adaptive thresholding	
	OR	
Q3.	How are arithmetic and logical operations on images performed? What are the different color spaces in which an image can be represented	[16]
	SECTION II	
Q4.	Define morphological image processing. Explain using the following: i. Structuring element ii. Types with examples of structuring elements iii. Hits and fits iv. Open and close v. Dilation and erosion For the given image and structuring element S, find the erosion and dilation image 	[18]
Q5.	Write mathematical equation and effects of image negation, log transformation and gamma transformations	[16]
Q6.	Explain process of convolution. How it can be used to remove noise. Write filters for various filters used in noise removal	[16]
	OR	
Q6.	Explain image transformations. Write the 3-D matrices and effects of rotation, translation, scaling and perspective transformation.	[16]