Total No	. of Questions : 8] SEAT No. :			
P7284	[Total No. of Pages : 2 [6181]-383A			
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B.E. (Robotics and Automation)				
MACHINE VISION SYSTEM				
	(2019 Pattern) (Semester-VII) (411501)			
<i>Time</i> : 2 <sup>1</sup>	[Max. Marks: 70			
Instructi	ons to the candidates:			
1)	Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.			
2)	Neat diagrams must be drawn wherever necessary.			
3)	Figures to the right side indicate full marks.			
<i>4</i> )	Use of calculator is allowed.			
5)	Assume suitable data, if necessary.			
<b>Q1</b> ) a)	Explain in detail geometic mean filters with relevant mathematical			
<b>21</b> ) u)	equations. [8]			
b)	For the below given 5×5 image find out following: [10]			
• •	Image-			
	14516			
	65722			
	0 0 1 5 1			
	20106			
	23320			
	i) Probability Density Function (PDF) of each pixel value.			
	ii) Huffman's Code for each pixel value.			
	iii) What is the Huffman's code length for highest & lowest probability			
	for rivel and aby? Instify your analyse			
	OR O			
<b>Q2</b> ) a)	Below is the 5×4 binary image. [8]			
	Image-			
	00111			
	11100			
	OR  Below is the 5×4 binary image.  Image- 0 0 1 1 1 1 1 1 0 0 0 0 1 1 1			

For the given image calculate following:

- Total number of Run length vectors
- ii)

11000

Compression ratio.

Predict if data is compressed? Justify your answer.

from hierarchical motion estimation?  Write a note on rotation & scale motion estimation techniques with relevant example.  [8]  OR  Write a note on hierarchical motion estimation and explain how it is used & why it is common?  [9]  b) Explain windowed correlation in motion estimation with relevant mathematical expression.  [8]  OR  Write a note on hierarchical motion estimation and explain how it is used & why it is common?  [9]  b) What is supervised learning algorithm and explain in detail.  [9]  What are deep neural networks and how it can be implemented in humanoid robots?  [8]		b)	Write a short note on transform coding compression technique. [5]
b) How the image is segmented with technique-based approach and explain an one type in detail?  OR  Q4) a) Write a short note on approach-based segmentation in an image segmentation.  [9] b) How the image is segmented with technique-based approach and explain Structural technique in detail?  [9] b) Explain Fourier based alignment in motion estimation & how it is different from hierarchical motion estimation?  [9] b) Write a note on rotation & scale motion estimation techniques with relevant example.  [8]  Q6) a) Write a note on hierarchical motion estimation and explain how it is used & why it is common?  [9] b) Explain windowed correlation in motion estimation with relevant mathematical expression.  [8]  Q7) a) What is supervised learning algorithm and explain in detail.  [9] b) What are deep neural networks and how it can be implemented in humanoid robots?  OR  Q8) a) Explain in detail unsupervised learning algorithm and explain how it is feasible to		c)	
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