Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER IV (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2740501 **Date:04/05/2016**

Subject Name: VIDEO PROCESSING

Time:10:30 am to 01:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What are the different Motion Models existing for Motion Estimation? Give difference between them. Explain Observation Motion Model for Motion Estimation.	**07**
	(b)	Explain Block Matching algorithm for Motion Estimation.	**07**
Q.2	**(a)**	1. Explain Motion Detection using fixed threshold approach. 2. Explain Spatiotemporal Sampling structure.	**07**
	(b)	Define Blotch Artifact. Describe mathematical model of this artifact. Describe various techniques to detect blotches.	**07**
		OR	
	(b)	Describe mathematical model of Intensity Flicker. Explain Flicker Parameter Estimation.	**07**
Q.3	**(a)**	Write and explain Maximum Likelihood Segmentation Algorithm for multiple motion segmentation.	**07**
	(b)	Explain the procedure of Motion Segmentation using two frames.	**07**
		OR	
Q.3	**(a)**	Explain a Restoration scheme for the Vinegar Syndrome.	**07**
	(b)	Explain DCT based Block Transform Coding for Video Compression. Give reasons, why DCT is more useful than DFT for Video Compression.	**07**
Q.4	**(a)**	Explain Region Based Object Tracking based on Color Histograms.	**07**
	(b)	Explain Feature Point Based Object Tracking.	**07**
		OR	
Q.4	**(a)**	Draw a block diagram of Generalized Transform based Video Compression system. Explain each block in brief.	**07**
	(b)	Explain Temporally Averaging Filters for Spatiotemporal Noise removal. Discuss disadvantages of it. Explain how Temporally Recursive Filters provides remedy to these problems.	**07**
Q.5	**(a)**	Explain H.261 data structure Hierarchy in detail.	**07**
	(b)	Draw and explain MPEG-1 bit stream syntax layers.	**07**
		OR	
Q.5	**(a)**	1. Write major differences between MPEG-1 and H.261 standard. 2. Why SAD (Sum of Absolute Difference) criteria is preferred over MSE (Mean Square Error) as an Estimation Criteria for Motion Estimation.	**07**
	(b)	Draw and explain block diagram of an MPEG4 Part 2 video encoder.	**07**

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