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GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VI (NEW) EXAMINATION - WINTER 2020

Date:27/01/2021 Subject Code:2161603

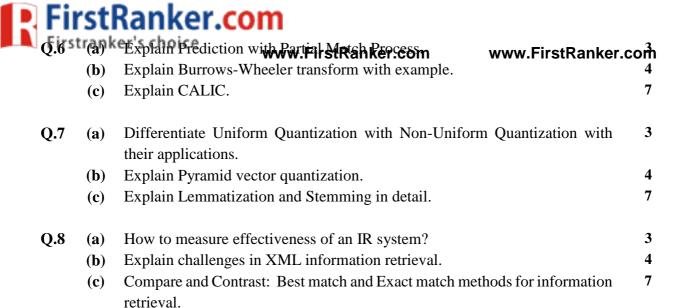
Subject Name: Data Compression and data Retrival

Time:02:00 PM TO 04:00 PM **Total Marks: 56**

Instructions:

- 1. Attempt any FOUR questions out of EIGHT questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

			MARKS
Q.1	(a)	Justify statement with suitable arguments. (T/F)	3
		"DATA COMPRESSION = MODELING + CODING "	
	(b)	Define Following Terms	4
		1. Compression Rate 2. 1st Order Entropy	
		3. Self-Information 4. Fidelity	
	(c)	For compressing large volume of data, there exist 3 different algorithms A1,	7
		A2, A3. How to select best algorithm from given options.	
Q.2	(a)	Define following terms:	3
		1. Prefix Code 2. Instantaneous Code	
		3. Uniquely Decodable Code	
	(b)	Differentiate following:	4
		1. Minimum Variance Huffman vs Traditional Huffman Algorithm	
		2. Static Algorithms vs Dynamic Algorithms	
	(c)	Find Extended Huffman Code for alphabet A={a ₁ ,a ₂ ,a ₃ } using probabilities	7
		{0.8, 0.02,0.18} respectively. Comment on values of Average length.	
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Q.3	(a)	Write the procedure to decode Arithmetic Coding Tag.	3
	(b)	Compare and Contrast Arithmetic Coding with Extended Huffman Coding.	4
	(c)	Write the method to generate a tag in Arithmetic Coding for string "statue".	7
Q.4	(a)	Differentiate Static Dictionary and Dynamic Dictionary based Algorithms	3
	(b)	Differentiate following:	4
		1. LZ78 Encoding vs LZW encoding	
		2. Arithmetic Coding vs Dictionary Based Coding	
	(c)	Encode string "ABABABABABAB" using LZW Coding.	7
Q.5	(a)	Which type of redundancies exists in Digital Images? Enlist all with suitable	3
		example.	
	(b)	Explain significance of Quantization in JPEG Compression.	4
	(c)	Draw and Explain Block diagram for Baseline JPEG Algorithm for RGB	7
		image.	



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