## **GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VI (NEW) - EXAMINATION - SUMMER 2016** 

Subject Code:2161603 Date:11/05/2016 Subject Name: Data Compression and data Retrival 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. 4. \* b need to be considered as blank space Define: - Compression Ratio, Entropy, Distortion, Data Retrieval, Query **Q.1 (a)** 07 Optimization, HINT and Run Length Coding. Explain modeling and coding. Explain how this will help to reduce entropy for **(b)** 07 following data. 9,11,11,11,14,13,15,17,16,17,20,21 Q.2 Explain Huffman Coding in detail with example. Define minimum variance **(a)** 07 Huffman codes. Explain Scalar Quantization in detail. **(b)** 07 OR Explain Vector Quantization in detail. 07 **(b)** Encode "aacdeaab" using Adaptive Huffman code. Derive Output string, Codes Q.3 07 (a) and final tree. Generate GOLOMB code for m=9 and n=8 to 13. 07 **(b)** OR Define Arithmetic Coding. Encode and Decode "BACBA" with arithmetic **Q.3** 07 (a) coding. (P(A)=0.5,P(B)=0.3,P(C)=0.2) Write procedure to generate TUNSTALL code. Generate TUNSTALL code 07 **(b)** with probability of P(A)=0.6, P(B)=0.3, P(C)=0.1 and n=3 bits. **O.4 (a)** Given an initial dictionary consisting of the letters a b r y **b**, encode the following 07 message using the LZW algorithm: abbarbarraybbybbarrayarbbay. Encode the sequence etabcetabandbbetabceta using Burrows-Wheeler **(b)** 07 transform and move to front coding.\* OR Encode the following sequence using the LZ77 and LZ78 algorithm: **Q.4** 07 **(a) b**arrayar**b**bar**b**by**b**barrayar**b**ba Assume you have a window size of 30 with a look-ahead buffer of size 15. Furthermore assume that C(a)=1, C(b)=2, C(b)=3, C(r)=4, and C(v)=5. \* Write a short note on Old JPEG standard and JPEG-LS. 07 **(b)** Explain and compare Incident matrix and Inverted index with example. Q.5 07 **(a) (b)** Explain Lemmatization and Stemming in detail. 07 OR Q.5 Explain skip pointers and Phrase queries with example 07 **(a)** Explain challenges in XML information retrieval. **(b)** 07

\*\*\*\*\*