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B.E. 6th (NEW) EXAMINATION APRIL - 2025

Subject Name : Data Compression   Subject Code: IT603-N
Date:09/04/2025 (Wednesday)   Time: 12.30 pm to 03.30 pm   Total marks: 70

Instructions:
1. Answer each section in separate Answer sheet.
2. All questions are compulsory.
3. Indicate clearly, the options you attempt along with its respective question number.
4. Use the last page of main supplementary for rough work.

Section-I

Q.1 (A) What is data compression? Compare lossless compression vs. lossy compression.   (5)

   (B) Define the terms: (i) Prefix code, (ii) Compression Ratio, (iii) Lossy Compression, (iv) Run   (5)
        Length Coding, (v) First order entropy

   (C) Check whether following code are prefix or not? (Mention all the necessary steps: (5)
        i) {0,01,11} ii) {1,100000,00} iii) {0,01,110,111} iv) {0,10,110,111}
        OR
   (C) Define the Golomb Code and Generate the Golomb Code for m = 5 and n = 0 to 9.   (5)

Q.2 (A) Explain markov model.   (5)

   (B) Define the Tunstall Code and Generate the Tunstall Code for P(A)=0.6, P(B)=0.3, P(C)=0.1   (5)
        and n = 3 bit.

                                          OR

Q.2 (A) What is the concept behind the Run Length Coding? Encode the following sequence using Run   (5)
        Length Coding: DDEEDFFFAAABBCCCCDDDDDFFFFEEECCCCCBBBBBAAAAAEEA
   (B) Explain the Shanon-Fano Algorithm with example.   (5)

Q.3 (A) List out the application of Huffman code and explain it in details.   (5)

   (B) Encode the message {acadebaa} using Adaptive Huffman Coding.   (5)
                                          OR

Q.3 (A) Comparison of Huffman and Arithmetic Coding.   (5)
   (B) Short note on arithmetic coding.   (5)

Section-II

Q.4 (A) Compare and contrast LZ77 and LZ78. (5)

(B) Define LZW. Encode and decode give sequence using LZW. (5)

(C) Describe the applications for Dictionary Techniques. (5)

OR

(C) Do compare static vs. adaptive method. (5)

Q.5 (A) Define context based compression. Explain PPM in details. (5)

(B) Short note on dynamic markov model. (5)

OR

Q.5 (A) Explain Burrows Wheeler Transform algorithm. (5)

(B) Explain JPEG Compression in detail. (5)

Q.6 (A) Short note on CALIC. (5)

(B) What is Multi resolution Approaches? explain. (5)

OR

Q.6 (A) What is quantization? explain various techniques. (5)

(B) Explain Discrete Cosine Transform. (5)

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