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BIELE-010

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

00793

Term-End Examination

June, 2018

BIELE-010 : SIGNAL COMPRESSION

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is allowed. Missing data may be suitably assumed.*

1. (a) Write down the various measuring parameters to determine the performance of the compression algorithm. *5*

(b) Explain the Markov model used in lossless compression with required expressions of dependence. *5*

2. (a) What do you mean by modeling and coding used in signal compression ? *5*

(b) Design a Huffman code for five symbols with probabilities 0·4, 0·2, 0·2, 0·1 and 0·1. Also determine the average size of this code. *5*

3. (a) Write down the various applications of Huffman coding. *5*

(b) Encode the sequence abracadabra by using dictionary technique, if a source has a five letter alphabet A = { a, b, c, d, r} *5*

4. (a) Describe prediction with partial match (PPM) algorithm with an example. *5*

(d) Why is the LZW algorithm more popular than the LZ78 algorithm ? Write down the applications of LZW algrithm. *5*

5. (a) Explain the Dynamic Markov compression technique. *5*

(b) Compare static dictionary and adaptive dictionary techniques. *5*

6. (a) Write down the various steps for the Linde-Buzo-Gray algorithm for quantization. *5*

(b) What is meant by rate distortion ? State the rate distortion theory for lossy coding with required expression of distortion. *5*

7. Why are quantizers required in lossy coding schemes ? Compare the uniform and non-uniform quantization schemes with required diagrams and expressions. *10*

8. (a) Evaluate the discrete rate distortion function R(D) for the binary source. *5*

(b) Why is discrete cosine transform required ? Write down its various advantages. *5*

9. Draw and explain the block diagram of sub-band coding systems. Also write down its various applications. *10*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Video Compression Standards

(b) Discrete Walsh-Hadamard Transform

(c) Lattice Vector Quantization