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No. of Printed Pages : 3

BIELE-010

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

Term-End Examination

December, 2015

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) Explain various reconstruction schemes of data compression technique. *5*

(b) What is the need of extended Huffman code ? *5*

2. (a) Find the Golomb code for m = 5, where m is the Golomb code parameter. *5*

(b) What are the advantages of Tunstall codes ? *5*

3. (a) What is the difference between the adaptive dictionary and static dictionary ? *5*

(b) Discuss the steps involved in basic algorithm for the prediction with partial match (ppm). *5*

4. (a) What do you understand by the length of Huffman code ? How is it determined ? *5*

(b) Write the Huffman coding algorithm. How is it used to design Huffman code for a source that takes letters from an alphabet set

$$A = \{ a_1, a_2, a_3, a_4, a_5 \} ?$$ *5*

5. (a) Explain Dynamic Markov Compression technique. *5*

(b) Describe the LZW approach of encoding the following sequence : *5*

wabba × wabba × wabba × wabba × woo × woo

6. What is meant by subband coding of speech signal ? Discuss the subband coding with a neat block diagram. *10*

7. Explain the Karhunen-Loève Transform (KLT) algorithm. Show that the transform matrix K is not a function of the autocorrelation value for 2×2 KLT. *10*

8. What is meant by tree-structured vector quantization ? Explain briefly about vector quantization for speech coding. *10*

9. (a) Draw and explain the block diagram of lossy predictive coding system. *5*

(b) Explain the rate distortion function for the Gaussian source. *5*

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

(a) Run-Length Coding

(b) Lattice Vector Quantizers

(c) Wavelet Based Compression