Hall Ticket Number:

Code No. : 5136

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

M.E. (ECE: CBCS) I-Semester Main Examinations, Jan./Feb.-2017

(Communication Engineering & Signal Processing)

Data Compression Methods

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. Write about the importance of Kraft inequality.
2. Mention the source coding theorem.
3. Define rate distortion.
4. Draw the block schematic of differential encoding schemes.
5. Mention the advantage of ordered Hadamard transform.
6. List any three properties of unitary transform.
7. Define quadrature mirror filters.
8. Draw the sub-band coding schematic along with spectra splitting in frequency domain
9. List the features of H.264 video standard.
10. Mention four features of Audio MPEG standards.

Part-B (5 × 10 = 50 Marks)
(All bits carry equal marks)

11. a) Discuss Burrows wheeler transform.
    b) Given A = {a1, a2, a3}, P(a1) = 0.8 , P(a2) = 0.02, P(a3) = 0.18, perform Huffman coding and extended Huffman coding(using block size = 2) and compare the average length of codes in each to entropy of source.
12. a) Calculate Rate distortion for Gaussian source.
    b) Describe vector quantization and its structures.
13. a) Illustrate procedure to get KL transform basis with the help of an example.
    b) Discuss cosine and sine transform. Mention its advantage over DFT.
14. a) Draw and explain the block schematic of Transform coding scheme.
    b) Describe different wavelet based compression schemes.
15. a) With the help of block diagram explain video compression standard, H.261 and H.263.
    b) Explain MPEG audio compression standard.
16. a) Discuss the concept of dynamic Markov compression.
    b) Explain non-uniform coding technique. Mention two applications.
17. Write short notes on any ***two*** of the following:
    a) Lempel-ziv coding.
    b) Discrete Walsh Hadamard transform.
    c) Dolby AC3.

15. a) Illustrate the types of membership functions in fuzzy logic.

    b) Write a DCG for parsing the following sentence

    - Bad man killed innocent people in the train.

16. a) Explain A* algorithm.

    b) Find the resolvant of the clauses in the set {(A ∨ B, ~A ∨ D, C ∨~B)}.

17. Write short notes on any ***two*** of the following:

    a) Expert systems versus traditional systems

    b) Recurrent networks

    c) Link parser.