

03/05/2016

8E 8062

Roll No. _____

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8E 8062

B.Tech. VIII Semester (Main) Examination, April/May 2016

Information Technology

(8IT3A) Data Compression Technology

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain lossless and lossy compression techniques with suitable example (6)
- b) Explain the derivation of average information (10)

OR

1. a) Explain modeling & coding in data compression? Explain various types of models used in data compression (10)
- b) How you test for unique decodability of code? Determine whether the following codes are uniquely decodable : (6)
 - i) {0,01,11,111}
 - ii) {0,01,110,111}

Unit - II

2. a) Given probability model

Letter	Probability
a_1	0.2
a_2	0.3
a_3	0.5

b

then find the real valued tag for the sequence $a_1 a_1 a_3 a_2 a_3 a_1$

(8)

(8)

- b) Explain various applications of arithmetic coding in data compression (8)

OR

2. a) Explain LZW encoding & decoding algorithms? Given an initial dictionary consisting of the letters : a b r y $\emptyset$ then encode the following message using LZW algorithm : a $\emptyset$ b a r $\emptyset$ a r r a y $\emptyset$ b y $\emptyset$ b a r r a y a r $\emptyset$ b a y (10)

- b) Explain adaptive dictionary - based compression techniques (6)

Unit - III

3. a) Explain probability models in details (6)
- b) Explain various types of adaptive quantization (10)

OR

3. a) Explain vector quantization procedure (8)
- b) Explain Linde-buzo-gray algorithm used in data compression. (8)

Unit - IV

4. a) Explain various types of delta modulation systems (8)
- b) Explain speech coding using delta modulation (8)

OR

4. a) Explain sampling in frequency & time domain in details (8)
- b) Explain discrete cosine transform & discrete sine transform (8)

Unit - V

5. a) Explain about filters and its types (8)
b) Explain the basic subband coding algorithm (8)

OR

5. Write short notes on following (16)
a) Wavelets
b) Scaling functions
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