B.E. Sem VII (Rev) EXTC: Data Compression & Encrypti
09/06/08

VT-May.08-114

Con. 2786–08. (REVISED COURSE) CO–3496

(3 Hours) [Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.

1. (a) What are uniqualy decodable codes ? What are the tests performed to determine them ? 5
(b) Compare arithmatic and Huffman coding. 5
(c) What are 'active' and 'passive' attacks on the security of a system ? 5
(d) What are the main features of digital signature standards. 5

2. A source and its letters form an alphabet –
A = { a, b, c, d, e } with probabilities
P = { 0·15, 0·05, 0·25, 0·35, 0·20 } respectively.
Calculate :–
(i) Standard Huffman code 5
(ii) Minimum variance Huffman code 5
(iii) Average length and redundancy of both the codes 5
(iv) Draw the binary code-tree for both the codes and also prove that they are prefix codes. 5

3. (a) With S = { m, n, o, p } and { 0·4, 0·3, 0·1, 0·2 } respectively, we encode the message 'pmnop'. Using arithmatic coding generater tag for encoding and also decipher the tag to decode the sequence. 10
(b) Describe the various authentication requirements for communication across the network. Explain different authentication functions. 10

4. (a) Taking an alphabet string, explain how LZ 78 encoding is done. Also for the same string explain the LZW encoding process. Write the codes for both the methods. 10
(b) Explain discrete Logarithm and Chinese Remainder theorem and its use in security. 10

5. (a) Explain the still image compression technique used in JPEG. 10
(b) What is the role played by KDC in symmetric Encryption ? 10

6. (a) Discuss the various standards of MPEG video. 10
(b) Explain the working of DES with block diagrams. 10

7. Write notes on (any **two**) :– 20
(a) Vector quantization
(b) Run length Encoding
(c) A-law and μ-law companding
(d) Hash and MAC algorithms.

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