

B.E.(Electronics & Telecommunication /
Electronics & Communication Engineering) Semester Seventh (C.B.S.)
Elective - I : Data Compression & Encryption

P. Pages : 2

Time : Three Hours



KNT/KW/16/7457

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Due credit will be given to neatness and adequate dimensions.
 9. Assume suitable data whenever necessary.
 10. Diagrams should be given whenever necessary.
 11. Illustrate your answers whenever necessary with the help of neat sketches.
 12. Use of non programmable calculator is permitted.

1. a) Calculate the average size of the code and entropy for the following using Shannon fano 7
0.25, 0.20, 0.15, 0.15, 0.10, 0.10 and 0.05.

b) Explain Huffman coding steps by giving one example. 6

OR

2. a) Explain the principle of arithmetic coding with the help of suitable example. 7

b) By using LZW decoding algorithm decode the sequence 6
<67> <70> <256> <258> <259> <257>.

3. a) Define companding and explain the A-law compression with example. 8

b) Explain ADPCM audio compression. 6

OR

4. a) Explain the format of compressed data in audio compression. 7

b) Explain MPEG encoder and decoder in detail. 7

5. a) Design 5 bit reflected gray code. 6

b) Solve two dimensional image transform with given matrix. 7
[5, 6, 7, 4; 6, 5, 7, 5, 7, 7, 6, 6; 8, 8, 8, 8].

OR

6. a) Give the comparison between JPEG and JPEG- 2000. 7

b) Write a short note on video compression. 6

7. a) Explain the block cipher principle. 6
b) Show that DES decryption is inverse of DES encryption. 7

OR

8. a) Why it is important to study the Feistel Cipher. 7
b) What is the difference between a block cipher and a stream cipher. 6
9. a) Perform encryption and decryption using the RSA algorithm for the following. $P = 11$, $q = 3$, $e = 3$, $M = 7$. 6
b) The given common prime number $q = 11$ and primitive rule $\alpha = 2$ if 7
i) $Y_a = q$ then find out $X_a = ?$
ii) If $Y_b = 3$ then find out the shared secret key between the user. Also find x_b

OR

10. a) Solve the given set of congruent equations using Chinese Remainder ThM. 7
 $x = 2 \pmod{3}$ -----(1)
 $x = 3 \pmod{5}$ -----(2)
 $x = 2 \pmod{7}$ -----(3)
b) Discuss Euler's Theorem. 6
11. a) Write down the key features of secure electronic transaction. 7
b) Define biometrics and distinguished between two broad categories of the technique. 7

OR

12. a) What are the different antivirus techniques explain that. 7
b) Write a short note on the following **any two**. 7
i) Intruders 7
ii) Viruses
iii) Worms
