

Duration :3hrs

Max.Marks:80

(1) Question No. 1 is compulsory.

(2) Attempt any three questions out of remaining five.

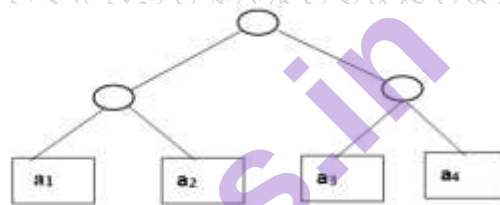
(3) Figures to the right indicate full marks.

(4) Assume suitable data if required and mention the same in answer sheet

1. Solve Any Four

20

- a) For the Huffman Tree shown below show the root node, branch nodes and the siblings.
Find the code for a_1, a_2, a_3 and a_4 from the tree. If average length of the code is 2bits/symbol and Entropy is 1.985bits/symbol. Calculate Redundancy and Efficiency of the code.



- b) Using LZW algorithm encode the sequence **BABACABABA**
- c) Encrypt the plain Text “MEET ME” using the key 421635. name the type of ciphering used here. How does it differ from Substitution ciphering
- d) For a frame size of 640x480(WxH) at a colour depth of 24 bits and frame rate of 25 frames per second calculate all the important properties of Digital Video
- e) Define Euler’s theorem and Euler’s Totient function and find $\phi(35)$
2. a) Encode **aabc** in the alphabet $\{a,b,c,d,\dots,j\}$ using adaptive Huffman coding algorithm, given the fixed length code for $a=000$, $b=001$, $c=010$ and $d=100$ 10
- b) State the difference between JPEG and JPEG 2000. State the applications advantages and limitations of JPEG 2000, Name the file name extension. 10
3. a) Explain DPCM and ADPCM used in audio compression 10
- b) Illustrate with a neat sketch Frame sequence of MPEG compression and H.261. How do they differ in their quantization procedure and file name extension 10

- 4 a) What are the essential ingredients of symmetric cipher? explain 10
b) Explain the working of DES, How long is the DES key? 10
5. a) What characteristics are needed to secure Hash function? What is the role of
compression function in Hash function ? 10
b) Explain RSA algorithm 10
6. Write short note on (Any Four) 20
a) SSL architecture
b) Fermat's theorem
c) Kerberos
d) Digital Signature
e) Cryptographic Attacks
