

Duration: 3hrs

[Max Marks:80]

- N.B. : (1) Question No. 1 is compulsory.
(2) Attempt any three questions from Q. No. 2 to 6.
(3) Assume suitable data, if required and state it clearly.

- Q.1 Solve any FOUR questions. [20]
- a Compare lossy and lossless data compression techniques with examples. [05]
 - b Describe MPEG-4 Audio layer standard. [05]
 - c Write a short note on Ethical hacking. [05]
 - d What are the goals of cryptographic systems? Explain any one in detail. [05]
 - e State and explain fermat's little theorem with an example. [05]
- Q. 2 a For the string $S = \{m, n, o, p\}$ with probability model, $P(S) = (0.4, 0.3, 0.1, 0.2)$ respectively, encode the message 'pmnop' using arithmetic coding and generators the tag. [10]
- b How JPEG- LS and JPEG 2000 standards can be used as improved Image Compression techniques. [10]
- Q. 3 a Take an alphabet string and show encoding procedure for LZ78 and LZW. Compare LZ78 and LZW techniques. [10]
- b Explain RSA algorithm to encrypt the plain text message, $M=2$ for prime numbers $p=17$ and $q=31$, public key $e =7$. Verify that the decrypted text is the same as plain text. [10]
- Q. 4 a Explain HASH and MAC functions with their role in cryptography. [10]
- b How Bob and Alice can do the key exchange using Diffie-Hellman Key Exchange algorithm? Explain with appropriate example. [10]
- Q. 5 a Write short note on: [10]
- 1. Biometric authentication
 - 2. Digital Immune System
- b Draw and explain Data Encryption Standard (DES) structure with its Key Generation architecture. [10]
- Q. 6 a Describe the steps involved in video compression techniques with H.264 video standard. [10]
- b Convert plain text "HIDE THE GOLD IN THE TREE STUMP" using Playfair Cipher technique. Use encryption key as "PLAYFAIR EXAMPLE" [10]
