

**K. J. Somaiya Institute of Technology, Sion, Mumbai-22**  
**(Autonomous College Affiliated to University of Mumbai)**

Nov – Dec 2023

(B.Tech.) Program: Electronics and Telecommunication Engineering

Examination: TY Semester: V

Course Code: EXDLC5051 and Course Name: Data Compression and Encryption

Date of Exam: 05/12/2023

Duration: 2.5 Hours

Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
<b>Q 1</b>	<b>Solve any six questions out of eight</b>	<b>12</b>		
i)	Compare LZ77 and LZ 78 approach.	02	1	2
ii)	Mention the features of H.264 standard.	02	2	2
iii)	Define the Substitution Cipher with example.	02	3	2
iv)	List significance of prime numbers is used in data compression.	02	4	2
v)	What is HMAC authentication? Explain in brief.	02	5	2
vi)	List advantages of digital Immune system	02	6	2
vii)	Compare performance of the Lossy Compression and Loss less Compression.	02	1	2
viii)	What are the characteristics of Secure Hash Algorithms?	02	5	2
<b>Q.2</b>	<b>Solve any four questions out of six.</b>	<b>16</b>		
i)	Explain the LZ78 coding process in detail.	04	1	2
ii)	Explain the $\mu$ -Law companding for audio compression with required equations and steps.	04	2	2
iii)	Compare Stream Cipher and Block Cipher.	04	3	2
iv)	State Fermat's Little theorem and describe its application in cryptography.	04	4	2

v)	Explain public key cryptography with neat diagram	04	5	2
vi)	Explain system security with respect to firewalls.	04	6	2
<b>Q.3</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	Discuss the LZW coding and decoding technique for text compression.	08	1	2
ii)	Explain Euler's Theorem Cryptography with suitable diagram.	08	4	2
iii)	Explain Diffie-Hellman key exchange algorithm with an example.	08	5	3
<b>Q.4</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	Explain the MPEG-4 standard with suitable diagram.	08	2	2
ii)	Explain the Data Encryption Standard (DES) with relevant diagram.	08	3	2
iii)	Describe Digital Immune system and its importance in network security with relevant diagrams.	08	6	2

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