K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

Nov – Dec 2021

Program: B. Tech(Electronics and Telecommunication Engineering)

Examination: TY Semester: V

Course Code: 1UEXDLC5051 and Course Name: Data Compression and Encryption

Duration: 03 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
Q 1	**Solve any six questions out of eight.**	**12**		
i)	What is the need for data compression?	**02**	1	U
ii)	What are the main features of MPEG-4?	**02**	2	R
iii)	What do you mean by digital audio?	**02**	2	R
iv)	What is the drawback of LZ78? Which dictionary technique overcome this drawback?	**02**	1	U
v)	What is masquerade? It is part of which type of attack?	**02**	3	U

vi)	DCT is best choice for JPEG. Justify/contradict.	**02**	2	U
vii)	Determine the value of ϕ (240)?	**02**	4	Ap
viii)	What do you mean by Message integrity?	**02**	5	R
Q.2	**Solve any four questions out of six.**	**16**		
i)	Explain μ- law companding with suitable example.	**04**	3	U
ii)	How is the motion compensation used in video compression?	**04**	2	U
iii)	What is a firewall and how can they be designed for the effective security?	**04**	6	U
iv)	Discuss the differences in the compression schemes of JPEG andJPEG2000.	**04**	2	U
v)	What do you mean by intrusion detection system? List types of IDS technologies.	**04**	6	U
vi)	State Fermat's Little Theorem and calculate 4^{99} mod 35.	**04**	4	R, Ap
Q.3	**Solve any two questions out of three.**	**16**		
i)	Explain Diffie Hellman Key exchange in detail with suitable example.	**08**	5	U
ii)	Consider A= {m, n, o, p} with P = {0.4,0.3,0.2,0.1}. Encode the message sequence "bcab" using arithmetic coding. Mention the applications of arithmetic coding.	**08**	1	Ap

iii)	Find the solution to the simultaneous equations using Chinese Remainder Theorem. $X \equiv 2 \bmod 3$ $X \equiv 3 \bmod 5$ $X \equiv 2 \bmod 7$	**08**	4	Ap
Q.4	**Solve any two questions out of three.**	**16**		
i)	Explain Affine Cipher. Use the affine cipher to decrypt the message "ZEBBW" with the keypair (7,2) in modulus 26.	**08**	3	Ap
ii)	Explain triple DES with three keys with suitable block diagram.	**08**	3	U
iii)	Explain Hashed MAC with block diagram.	**08**	5	U