

University of Mumbai

Examination 2020

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: Electronics and Telecommunication Engineering

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: _ECCDLO5014_____ and Course Name: _Data Compression and Encryption____

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	In Huffman coding, data in a tree always occur in?
Option A:	roots
Option B:	Leaves
Option C:	Left sub trees
Option D:	Right sub trees
2.	The type of encoding where no character code is the prefix of another character code is called?
Option A:	optimal encoding
Option B:	prefix encoding
Option C:	frequency encoding
Option D:	tree encoding
3.	When the base of the logarithm is 2, then the unit of measure of information is
Option A:	Bits
Option B:	Bytes
Option C:	Nats
Option D:	None of the mentioned
4.	Lempel-Ziv algorithm is
Option A:	Variable to fixed length algorithm
Option B:	Fixed to variable length algorithm
Option C:	Fixed to fixed length algorithm
Option D:	Variable to variable length algorithm
5.	Compression is inevitable for
Option A:	Storing data
Option B:	Transmitting data
Option C:	Both
Option D:	It is not required
6.	Which of the following transforms is usually used in image compression?
Option A:	Fourier Transform
Option B:	Discrete Cosine Transform

Option C:	Laplace Transform
Option D:	Discrete Compression Transform
7.	Which of the following compression technique uses a triple to send to the receiver side?
Option A:	LZ77 Dictionary Coding
Option B:	LZ78 Dictionary Coding
Option C:	LZW Dictionary Coding
Option D:	Arithmetic Coding
8.	Which is more efficient method?
Option A:	Encoding each symbol of a block
Option B:	Encoding block of symbols
Option C:	Encoding each symbol of a block & Encoding block of symbols
Option D:	None of the mentioned
9.	DCT requires an input for JPEG image compression in blocks of
Option A:	4 by 4
Option B:	8 by 8
Option C:	16 by 16
Option D:	8 by 16
10.	Which of the following is true regarding JPEG-LS?
Option A:	does not use the DCT
Option B:	uses quantization in a restricted way
Option C:	does not employ arithmetic coding
Option D:	All of the above
11.	A Full HD image (1920*1080) requires approximately how many kilobits of storage?
Option A:	24300
Option B:	6075
Option C:	48600
Option D:	None of these
12.	Adaptive DPCM is used to
Option A:	Increase bandwidth
Option B:	Decrease bandwidth
Option C:	Increase SNR
Option D:	None of the mentioned
13.	What is motion compensation?
Option A:	Motion compensation is an algorithmic technique employed in the encoding of video data for video compression.
Option B:	Motion compensation is an algorithmic technique employed in the encoding and decoding of video data for video compression.
Option C:	Motion compensation is an algorithmic technique employed in the decoding of video data for video compression.

Option D:	None of these
14.	Cryptanalysis is used _____
Option A:	to find some insecurity in a cryptographic scheme
Option B:	to increase the speed
Option C:	to encrypt the data
Option D:	to make new ciphers
15.	Use Caesar's Cipher to decipher the following HQFUBSWHG WHAW
Option A:	ABANDONED LOCK
Option B:	ENCRYPTED TEXT
Option C:	ABANDONED TEXT
Option D:	ENCRYPTED LOCK
16.	The multiplicative Inverse of 550 mod 1769 is
Option A:	434
Option B:	224
Option C:	550
Option D:	Does not exist
17.	$\phi(37)=$
Option A:	24
Option B:	22
Option C:	13
Option D:	36
18.	$7^3 \text{ mod } 19 =$
Option A:	18
Option B:	1
Option C:	14
Option D:	12
19.	Which key exchange technique is not supported by SSLv3?
Option A:	Anonymous Diffie-Hellman
Option B:	Fixed Diffie-Hellman
Option C:	RSA
Option D:	Fortezza
20.	In TLS, padding can be upto a maximum of
Option A:	79 bytes
Option B:	127 bytes
Option C:	255 bytes
Option D:	none of the mentioned

Q2	Solve any Two Questions out of Three	10 marks each
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A	A source emits letters from an alphabet, $A = \{a_1, a_2, a_3, a_4, a_5\}$ with probabilities $P(a_1) = 0.15$, $P(a_2) = 0.04$, $P(a_3) = 0.26$, $P(a_4) = 0.05$, and $P(a_5) = 0.50$. (a) Calculate the entropy of this source. (b) Find a Huffman code for this source. (c) Find the average length of the code in (b) and its redundancy.
B	Write a short note on mu-law and A-law companding with digital audio. What is the difference between them?
C	Illustrate with neat sketch frame sequence of MPEG compression and H.261. How do they differ in their file name extension?

Q3	Solve any Two Questions out of Three	10 marks each
A	Explain RSA Algorithm with an example	
B	There are in all 16 rounds in DES. Explain the details of one round in DES.	
C	What characteristics are needed to secure Hash function? What is the role of compression function in Hash function?	