21 APRIL Wednesday

9 Ramadan 1442 h

April 2021

S	S	M	T	W	T	F
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

May 2021

S	S	M	T	W	T	F
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Warning

ممكن يكون فيه اخطاء

* معناها مش متأكد من الحل

08:00 ★ Exam :- Fall 2017 :-

08:30 Q1:-

09:00 A. i. مش عليا "To smooth The edges resulting from

09:30 The Digital-to-Analog Converter"

10:00 ii. To exploit The Spatial Redundancy, reducing

10:30 The Size of frame sent

11:00 iii.* To reduce BiT rate required To send

11:30 Images, Audio or Video

12:00 iv.* To give The required Quality for each band

01:00 , as Humans are sensitive to some freq. band

01:30 More Than others

02:00 "Non Linear Quantization :- Different Step Sizes"

02:30 V. مش عليا

03:00

03:30 B. مش عليا

04:00 بس ممكن تحلها معلومات

04:30 Image processing الـ

05:00 Compression او دروس

05:30

Q2, Digital video standards موجود بالنص في

A.	I, B, P	I only	I, B	I, P
Compression Ratio	Highest	Lowest	closest to I, B, P	Moderate
decoder Memory	~~Mo~~ largest	Smallest	Closer to I, B, P	Moderate
Video editing	Hardest to edit	easiest to edit	needs Moderate processing	less effort than I, B
Applicat.	Final delivery of Post. Processing	editing Multimedia	* editing After Some encoding	* editing after Some encoding

perceptual Audio encoding من شابتر

B.

i. Threshold of Hearing: The least "Sound" That Humans Can Hear, iT varies based on frequency of Sound, with The lowest value between 1-5 kHz

Frequency Masking: if a tone or frequency Band Has High enough Intensity/Power, iT can Mask other Neighboring Tones, either partially, or Completely Hiding Them "Humans won't Hear Them
The higher The intensity, The higher The Masking Threshold

Temporal Masking: if a tone or frequency Band Has High enough Intensity/Power, iT can Mask other tones That come Afterwards "The Tone is high enough That Humans can't Hear other Sounds for a while".
The Masking is for about 500 msec, its Threshold Decreases as Time Passes.

ii. Based on experiments, it has been found that the "Silence" or Threshold of Hearing varies based on the frequency of the sound played, where the lowest threshold exists @ 1 ↔ 5 kHz.

The experiments assumed 10^{-10} watts/m^2 to be the lowest intensity a human can Hear

iii. The Audio is Split first into 32 freq. Bands, where Thresholding/Masking helps reduce bits as follows:

1. The Completely Masked Bands won't be heard, so they won't be sent in the first place
2. The partially Masked Bands will not be sent completely, only the Difference between their intensity & the masking Threshold, effectively reducing the bits required

Same for Temporal Masking

"لو فيك حل شرح واشرح"

Q3:

A. مش علينا

B.

i. مش دارسنها الصراحة.

ii.

P-Frame	B-Frame
uses forward prediction, where the reference frame is I or P frame, Requires less Decoder Memory	uses forward, Backword or interpolative Prediction "Averaging" where the reference frame is I or P frame, Needs More Decoder Memory

iii.

I-Frame	D-Frame
Intra-Coded frame, Moderately Compressed using Techniques like: DCT, Sub sampling	Contains the DC components of Intra frames. Rarely used to speed up encoding process

, used as

iv.	Intra Coding	inter Coding
	coding each Macro Block separately, without need of a Reference frame, using Techniques like DCT	Coding Macro Blocks with Motion Vectors, needs a reference frame
	Done on I-frames	Done on P, B frames

Q4:-

A- مش عليا

B- مش عليا

C- مش عليا

غالبا مش عليا

Q5:-

A. i. ~~Convert~~ Converting Continous Values into Discrete ones by Approximating Them To the nearest Level, used for Converting Analog to Digita

ii. The representation of the Motion Done by a MacroBlock in the current frame, with Respect to one or More Reference frames

iii. instance of Scene, where the Video object exists

B.

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
level	37	2	8	15	22	3	18	4	55	12	17	27	2	3	5	10

Thres hold = $\frac{1}{4}$ × Level (Affects only the next and previous 1Band)

No Thres

1 ⇒ 9.25
2 ⇒ 0.5
3 ⇒ 2
4 ⇒ 3.75
5 ⇒ 5.5
6 ⇒ 0.75
7 ⇒ 4.5
8 ⇒ 1
9 ⇒ 13.75
10 ⇒ 3
11 ⇒ 4.25
12 ⇒ 6.75
13 ⇒ 0.5
14 ⇒ 0.75
15 ⇒ 1.25
16 ⇒ 2.5

Masked Band	Masker Band
2	1
6	5, 7
8	7, 9
10	9
13	12

Included Bands:-
1, 3, 4, 5, 7, 9, 11, 12, 14, 15, 16

c. i. Like Geo

ii. MPEG-7: used to Describe the Multimedia content inside the Video
- useful for Query or Filtering Agents
- using XML like format.

Includes Table of contents, Still Images, etc.

MPEG-7: used for further Compressing the video, As well as including the Concept of Audio/Video Objects and Partitioning scene into Arbitrary shaped areas, used in interactive Graphics Applications, Digital T.V
- resultant Bit rate from 5kbit to 10Mb/s

iii. Like Geo