

	A	B	C	D
a)	ii	i	iii	iv
b)	iv	iii	ii	i
c)	ii	iv	iii	i
d)	iii	i	ii	iv

5. Assertion (A): In MPEG-1, there is no need for motion compensation algorithms based on fields. CO4 [K₂]

Reason (R) : MPEG-1 does not allow interlaced video.

- a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A
- c) A is true but R is false d) A is false but R is true

6. In G-711 standard , the recommended μ & A values in μ -law & A-law respectively ----- & ----- CO2 [K₂]

- a) 255, 100 b) 255, 255
- c) 100, 255 d) 50, 255

7. Which of these statements are correct? CO2 [K₂]

1. LZW algorithm is used in GIF format
2. Adaptive Huffman coding cannot be used when probabilities are not known.
3. JBIG is used to compress 24 bit color images
4. Static dictionary technique is more appropriate when considerable prior knowledge about the source is available.

- a) 1,3 b) 1,4
- c) 2,4 d) 3,4

8. The sampling format 4:2:2 is used in: CO4 [K₁]

- a) CIF b) SIF
- c) QCIF d) CCIR601

9. To reduce granular error, ----- is kept small in delta modulation. CO3 [K₁]

- a) Step size b) Quantization level
- c) Sampling rate d)

10. Consider the following steps of JPEG compression process. CO5 [K₂]

- 1) Scalar Quantization and perform encoding- Huffman encoding
- 2) Applying transformation- Discrete cosine transform on pixels
- 3) level shift the input image by 2^{P-1}
- 4) divide the input image into 8 x 8 blocks

The correct sequence of the above procedure is

- a) 4-3-2-1 b) 1-3-2-4
- c) 3-4-2-1 d) 3-4-1-2

PART B (10 x 2 = 20 Marks)

11. Define uniquely decodable code with one example. CO1 [K₁]
12. What is the amount of storage needed for a 2 hour movie which is composed of series of still frames of size 720 x 580, typically 30 frames per sec? CO1 [K₂]
13. What are the features improved in JBIG-2 over JBIG? CO2 [K₂]
14. Generate Huffman Code for the source with the probability model $p(a_1)=0.15$, $p(a_2) = 0.35$, $p(a_3)=0.2$, $p(a_4) = 0.3$. CO2 [K₂]
15. What is role of quadrature mirror filter in sub-band coding? CO3 [K₁]
16. Calculate the intensity level of audio in decibels if the power delivered by an audio system is 3 watts against the standard faintest audible sound? CO4 [K₂]
17. What are the wavelet coefficient sets and lists defined in SPIHT? CO4 [K₂]
18. What is the need for applying transform on image in image compression schemes? CO4 [K₂]
19. Name the profiles and levels used in MPEG 2 standard. CO4 [K₁]
20. State the salient features of video compression standards AVI and Real Media. CO5 [K₂]

PART C (6 x 5 = 30 Marks)

21. Derive the signal-to-quantization noise power of a uniform scalar quantizer. CO1 [K₃]
22. Draw the flowchart for adaptive Huffman encoding algorithm and explain the same. CO2 [K₂]
23. With neat block diagram, explain PCM system used for audio compression. CO2 [K₂]
24. With neat block diagram and frame structure, explain the mp3 audio compression algorithm. CO3 [K₃]
25. Explain the role of optimal predictors in image compression. CO4 [K₃]
26. Discuss the role of motion compensation in video compression. CO4 [K₃]

Answer any FOUR Questions

PART D (4 x 10 = 40 Marks)

27. (i) Use LZW algorithm to encode the following sequence: (5) CO2 [K₃]

wabbwabbbaooaoaoao

Assume that the alphabet for the source is [a,b,o,w]

- (ii) Consider a source $A = \{a_1, a_2, a_3\}$ with the probability model $p(a_1) = 0.65$, (5)

$p(a_2) = 0.15$, $p(a_3) = 0.2$. Generate a real valued tag for the sequence $a_1a_3a_2a_3$

using arithmetic coding.

28. (i) Elucidate the μ -law companding method for encoding & decoding audio data. (5) CO2 [K₃]
(ii) Encode the input sample 850 using μ -law encoder and decode the same and (5)
find out the deviation in the decoded output.

29. For a three level decomposition shown below, calculate the bit stream generated CO4 [K₃]
by the EZW coder.

21	6	15	12
-6	3	6	3
3	-3	0	-3
3	0	0	0

30. Enumerate the features and key components involved in JPEG 2000 in detail. CO4 [K₃]
31. With the neat sketch, explain the encoder structure of H.261 video coding. CO4 [K₃]
