MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : IT-702

MULTIMEDIA

Time Allotted: 3 Hours

Full Marks: 70

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words
as far as practicable.

Group – A

(Multiple Choice Type Questions)

1. Choose the correct alternative of the following: http://www.makaut.com $10 \times 1 = 10$

   (i) MP3 is in which of the following MPEG Standards?

      (a) MPEG1   (b) MPEG2

      (c) MPEG3   (d) MPEG21

   (ii) The MIDI standard specifies how many channels?

      (a) 16   (b) 24

      (c) 32   (d) 40

   (iii) CD ROM operates on

      (a) 1 mode   (b) 2 mode

      (c) 3 mode   (d) 4 mode

   (iv) Rich text is known as   http://www.makaut.com

      (a) Un-formatted text   (b) Formatted text

      (c) Hypertext   (d) None of these

   (v) Two parts of Morphing algorithms are

      (a) Wrap and Tweening   (b) Tweening and Wrap

      (c) Wrap and Dissolve   (d) Tweening and Dissolve

(vi) Huffman Encoding is a _____ encoding techniques.

(a) Suffix

(b) Prefix

(c) Both (a) and (b)

(d) None of these

(vii) Resolution of VGA monitor is (in pixel) http://www.makaut.com

(a) 640 × 480

(b) 800 × 600

(c) 320 × 440

(d) 1024 × 768

(viii) MPEG Stands for

(a) Motion Picture Express Group

(b) Motion Picture Expert Group

(c) Motion Picture Export Group

(d) None of these

(ix) BMP format uses which of the following algorithms?

(a) Huffman

(b) Run length Algorithm

(c) Neither (a) nor (b)

(d) Both (a) and (b)

(x) In Gray scale color mode, we get _____ number of different color.

(a) 2^{24}

(b) 2^8

(c) 2^{16}

(d) 2^2

Group – B

(Short Answer Type Questions)

Answer *any three* of the following.

5×3=15

2. What is Multimedia? In this context illustrate the basic properties of multimedia system. 2+3=5

3. State the Nyquist sample theorem. What is sampling? An analog signal containing components with frequency value ranging from 60 Hz to 6 kHz is to be sampled. Determine the sampling frequency and the band width of band limiting filter. http://www.makaut.com 2+1+2=5

4. Compare NTSC, PAL and SECAM system of standard for television. What is HDTV? 3+2=5

5. What is morphing? What is the difference between morphing and shape tweeing? What is animation? 2+2+1=5

6. What are different image file formats? How motion JPEG differs from MPEG? 2+3=5

Group – C
(Long Answer Type Questions)
Answer *any three* of the following.

15×3=45

7. (a) What are the different types of audio file format? http://www.makaut.com

(b) What is image resolution? What is color gamut?

(c) What are hyper text and hyper media?

(d) Write down the names of three popular image file formats.

(e) What is compression? Write MPEG compression algorithm.

2+2+2+3+(2+4)=15

8. (a) What do you mean by CODEC? What is the difference between intraframe and interframe compression?

(b) What do you mean by I-frame, B-frame and P-frame in the context of video compression?

(c) Why compression is required? What is the difference between lossless and lossy compression?

(1+2)+6+(2+4)=15

9. (a) What is Huffman coding? http://www.makaut.com

(b) A series of messages is to be transferred between two parties. The messages comprise the character from A to E. Relative frequency of occurrence of each character is: A = 0.35, B = 0.17, C = 0.17, D = 0.16 and E = 0.15. Using the Huffman coding derive the Huffman tree and calculate the codeword set.

(c) Write down the steps to develop multimedia applications.

(d) What are the advantages of using Luma-Chroma Transmission principle in context of video signals?

2+5+3+5=15

10. (a) What is the purpose of synchronization?

(b) What is quad tree? Write the structure of K_d tree.

(c) A magnetic disc pack has 12 surfaces out of which 10 are recordable. Each surface has 50 tracks and each track is divided into a number of sectors. If the total capacity of the disc is 50000 KB and the capacity of each sector is 512 bytes, then

    (i) how many sectors are present on each track?

    (ii) how many cylinders are present in the disc pack?

4+2+(3+6)=15

11. Write short notes on *any three* of the following: http://www.makaut.com

5×3=15

    (i) Video on demand

    (ii) Vector graphics

    (iii) ODA

    (iv) R-Tree

    (v) SGML