Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(CSE-NEW)/SEM-6/CS-605C/2013

2013

MULTIMEDIA TECHNOLOGY

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 alternatives for the following : 10 × 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

a) un-formatted text b) formatted text

c) hypertext d) none of these.

v) Two parts of Morphing algorithms are

a) warp & tweening b) tweening & wrap

c) wrap & dissolve d) tweening & 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)

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 algrorith

c) neither (a) and (b) d) both (a) and (b)

x) In Gray scale colour mode, we get ..... number of different colour.

a) 2^{24} b) 2^{8}

c) 2^{16} d) 2^{2} .

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. a) State the Nyquist sampling theorem. A communication channel can carry signal with frequency from 20 Hz to 20 kHz. Determine the sampling frequency. 1 + 2

   b) Explain masking. 2

3. Explain the terms 'hypertext' and 'hypermedia' ? What is leading ? 4 + 1

4. Explain Run Length Encoding with an example. What is Lempel-Ziv coding ? 3 + 2

5. Define the terms 'Sampling', 'Quantization' and 'Quantization Error' related to the digitization of analog signal with suitable diagram. 1 + 1 + 3

6. What is MIDI ? Explain the advantages and disadvantages of MIDI over digital audio. Write few audio file format's name. 1 + 2 + 2

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) What are differnet image file formats ?

   b) Explain in brief the various steps in JPEG compression technique

   c) A document contains letters *A* through *F* with freuencies as indicated :

   A : 0·25

   B : 0·10

   C : 0·20

   D : 0·15

   E : 0·26

   F : 0·04

   Using Huffman coding, derive the Huffman tree and also calculate the codeword set. 3 + 7 + 5

8. a) What is multimedia database ? Describe in brief how the image database is constructed.

   b) What do you mean by I-frame, B-frame and P-frame in the context of video compression ? Explain with proper picture and example. 2 + 5 + 8

9. a) Differentiate between CAV for hard disks and CLV for CDs. How is CD-ROM format different from the CD-DA format ? What do you mean by Mode 1 and Mode 2 ?

   b) A magnetic disk pack has 12 surfaces out of which 10 are recordable. Each surface has 50 track i divided into a number of sectors. If the total capacity of the disk pack 50000 k bytes and the capacity of each sector is 512 byes, then

      i) How many cylinders are present in the disk pack ?

      ii) How many sectors are present on the each track ?

   c) Explain Document Type Definition (DTD) ? Write the minimization rules of DTD ? 3 + 3 + 4 + 3 + 2

10. a) Define *R*-tree ? Write down the structure of *K-d* tree.

    b) What is the purpose to use synchronization ?

    c) Describe briefly multimedia open document architecture. (3 + 4) + 3 + 5

11. Write the short notes on any *three* of the following : 3 × 5

    a) Video on demand

    b) Lossy and lossless compression

    c) HTML

    d) SGML

    e) RGB colour model.