Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(ICE)/SEM-6/IC-602/2011

2011

MULTIMEDIA SYSTEMS

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) Resolution of VGA Monitor is (in pixels)

a) 640 × 480 b) 800 × 600

c) 1024 × 768 d) 320 × 440 .

ii) The video standard used in India is

a) NTSC b) PAL

c) SECAM d) BHABA-256.

iii) Acoustics means

a) Branch of science dealing with the study of sound

b) Branch of science dealing with the study of aqua.

c) Branch of science dealing with the study of air

d) Both (a) and (b).

iv) Total number of pixels per unit length of the monitor is

a) Aspect Ratio b) Color Depth

c) Resolution d) Pixel Addressability.

v) An analog signal containing components with frequency values ranging from 50 Hz to 5KHz to be sampled. What will be the sampling ?

a) 100 Hz b) 150 Hz

c) 6 KHz d) 10 KHz.

vi) A 15 inch monitor with an aspect ratio of 4 : 3 has a pixel addressability of 800 × 600. What is the resolution ?

a) 50 dpi b) 66.67 dpi

c) 86.67 dpi d) 55.56 dpi.

vii) In video adaptor card VRAM stands for

a) Virtual RAM b) Volatile RAM

c) Video RAM d) none of these.

viii) Tweening is related to

a) Sound b) Animation

c) Compression d) Image.

ix) Default file type for Flash is

a) .jpeg b) .mov

c) .fla d) .aiff.

x) Resolution means

a) No. of component

b) No. of small square boxes

c) No. of pixels

d) No. of pixels per unit length.

GROUP – B

(Short Answer Type Questions)

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

2. a) Describe important characteristics of multimedia presentation.

   b) How does interlacing function and where is it used ?

   3 + 2

3. a) Distinguish between loudness, pitch and timbre of sound waves.

   b) "A digital sound signal is always a degraded version of the original analog signal" — Explain. 3 + 2

4. a) What is meant by font ? Differentiate between bitmap fonts and vector fonts.

   b) Describe LZW Coding methods of text compression.

   3 + 2

5. a) What is meant by device dependency and gamut of color models ?

   b) Why do we require multiple color model ? 3 + 2

6. a) What is time base ? How can video clips with different frame rates adapt to a common time base ?

b) Consider a TV camera where maximum intensity of a color signal is represented by 1 volt. An unsaturated magenta signal is formed by mixing 70% R, 20% G and 60% B. What is the luminance output voltage for the signal ? 2 + 3

GROUP – C

(Long Answer Type Questions)

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

7. a) The energy content of two sound waves, measured with respect to a reference value, is E_1 decibels and E_2 decibels respectively. Find the ratio of their amplitude.

b) How can audio be used in multimedia presentation ?

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

d) A document contains letters *A* through *F* with frequencies as indicated :

A : 0.25 *B* : 0.1 *C* : 0.2 *D* 0.15 *E* 0.26 *F* 0.04.

Use Huffman coding to derive a codeword set. 4 + 3 + 4 + 4

8. a) Distinguish between

   i) image & graphics

   ii) video & animation

   b) Discuss in brief the following major text file formats.

   i) TXT

   ii) AVI

   iii) RTF

   iv) PDF.

   c) Explain how anti-aliasing and dithering can improve image quality.

   d) An image has an aspect ratio $A : B$, a file size of F and a diagonal length of L. Find an expression for its color depth C. (2 + 2) + 4 + 3 + 4

9. a) What is the difference between intraframe and interframe compression ?

   b) What is meant by Run Length Encoding ?

   c) Explain how compression is achieved using the GIF standards. Is it lossy or lossless ?

   d) How can data be written on a CD-R ? What are the limitations ? 3 + 3 + 5 + 4

10. a) What are the three axes in an L*a*b* color model called ?

b) Explain the roles played by the "quantization table" and 'zigzag" scanning" in the JPEG coding algorithm.

c) What is the difference between "anti-aliasing" and dithering techniqe ?

d) A 15-inch monitor having an aspect ratio 9 : 5 has 1080 pixels along a row and 2 refresh rate of 60 units. What is its horizontal scan rate ? 3 + (3 + 3) + 3 + 3

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

i) AVI

ii) Animation

iii) Movie-on Demand

iv) CLUT

v) UNICODE

vi) MIDI.