



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.

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GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.

$3 \times 5 = 15$

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.

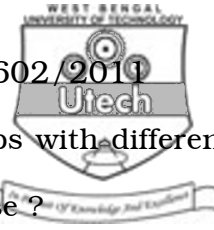
b) Describe LZW Coding methods of text compression.

$3 + 2$

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. $3 \times 15 = 45$

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

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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 technique ?
- 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.

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