

**Total number of printed pages – 4**      **B. Tech**  
**BCSE 3401**

## **Eighth Semester Examination – 2008**

### **COMPUTER GRAPHICS AND MULTIMEDIA**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory  
and any **five** from the rest.*

*The figures in the right-hand margin  
indicate marks.*



1. Answer the following questions :      2 × 10
- (i) Define persistence and refresh rate.
  - (ii) What is a homogeneous co-ordinate ?
  - (iii) Differentiate between beam penetration and shadow mask techniques of color CRT ?

- (iv) Differentiate between viewing transformation and composite transformation.
- (v) What is frame buffer ?
- (vi) Find the reflection of the point P (23 , 36) about the line  $x = -12$ .
- (vii) Explain why compression is important in multimedia activities.
- (viii) Distinguish between multimedia and hypermedia.
- (ix) Explain I-frame, P-frame and B-frame.
- (x) State different shading methods.

2. Describe, in detail, an algorithm that will draw a one-pixel wide outline of a circle of integer radius centered on the origin. Describe the modifications required to your algorithm in question 4 to make it draw a filled circle.      10

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3. Differentiate between Bresenham and DDA line drawing algorithms.

If you draw lines on a monochrome display device using Bresenham algorithm, does a 45° line look brighter, same, or dimmer than one drawn horizontally ? Answer why ? Assume that the display has square pixels that do not overlap and no anti-aliasing. 7+3

4. What are different visualization techniques for achieving realism ? 10

5. Explain the steps for drawing spline curves. What do you mean by basis function ? State how end points are handled. 10

6. (i) A video monitor with display area 12 inches across and 9.6 inches high has 1280 by 1024 resolution and aspect ratio is 1. What is diameter of each screen point ? 6

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(ii) A raster system has a resolution of 640-by-480. How many pixels could be accessed per second in this system by a display controller that refreshes the screen at 60 Hz ? 4

7. With detail explanation compare and contrast Cohen-Sutherland and Nicholl-Lee-Nicholl line clipping algorithms. How interior regions are found with winding number rule ? 7+3

8. Write short notes on the following : 2.5×4

(i) Multimedia Components

(ii) Image Compression

(iii) Composite Video

(iv) MPEG.

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