

**[07 BENG - 3208]**

**III/IV B.Tech. DEGREE EXAMINATION.**

**Second Semester**

**Computer Science Engineering**

**Elective - II : (E) — COMPUTER GRAPHICS**

(Effective from the admitted batch of 2015-2016)

Time : Three hours

Maximum : 70 marks

First Question is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

Answer all parts of any question at one place.

1. Briefly explain the following :
  - (a) Random Scan System
  - (b) Antialiasing
  - (c) Line Clipping
  - (d) Visualization
  - (e) YIQ Color Model
  - (f) Matrix of 3D clockwise rotation over X axis
  - (g) Windows and Icons
  
2.
  - (a) Discuss clearly about raster scan display processors.
  - (b) Explain in detail about various Input Devices.
3.
  - (a) Write the DDA line drawing algorithm and explain it with a suitable example.
  - (b) Write any one of ellipse generation algorithm with an example.
4.
  - (a) Explain about Affine Transformations.
  - (b) Derive the transformation matrix for reflection and shear operations in 2D.
5.
  - (a) Discuss clearly about perspective projection and its application.
  - (b) Derive the transformation matrix for reflection and shear transformations in 3D.
6. Write the Sutherland Hodgeman Polygon Clipping algorithm and explain its working with a suitable example.
7. Discuss in detail about Bezeir and B-Spline surfaces.
8.
  - (a) Write in detail about Raster animations.
  - (b) Discuss about back face detection methods.

[07 - 3112]

III/IV B.Tech. DEGREE EXAMINATION.

First Semester

Computer Science Engineering

Elective I - COMPUTER GRAPHICS

(Common with Information Technology and  
B.Tech.+M.Tech. Dual Degree)

(Effective from the admitted batch of 2004-2005 and  
after batches)

Time : Three hours

Maximum : 70 marks

First question is compulsory.

Answer any FOUR from the remaining questions.

All questions carry equal marks.

Answer all parts of any questions at one place.

1. (a) Define Persistence and pixel.
- (b) Mention the purpose of a frame buffer.
- (c) What is cell array?
- (d) List the important properties of Bezier curve.
- (e) Define projection reference point and mention its use.

Devi

1. (f) Write the advantages of rendering polygons by scan line method.
- (g) List out the various text clipping techniques.
2. (a) Name some digital input devices and briefly explain them with respect to their functioning.
- (b) Plot a circle centred at (2, 5) having radius of 7 units using the mid point circle algorithm.
3. (a) Distinguish between seed filling and scan line-filling algorithm.
- (b) Give a note on inquiry functions.
4. (a) Prove that two successive reflections about any coordinate axes is equivalent to a single rotation about the origin.
- (b) Find the normalization transformation matrix for a window of radius 4 units and centre at origin to the viewport of radius 1 unit and centre at (1, 1).
5. (a) Show why the Sutherland-Hodgman clipping algorithm will only work for convex clipping region.
- (b) Give a brief note on hierarchical modeling with structure.
6. (a) What is meant by spline? Explain about representing spline in computer graphics.
- (b) Briefly describe about Bloppy objects.
7. Determine 3D transformation matrix to scale the line PQ in the x direction by 3 by keeping point P fixed. Then rotate this line by 45° anticlockwise about the z axis. Given  $P(1, 1.5, 2)$  and  $Q(4.5, 6, 3)$ .
8. (a) Write a procedure to perform a one-point perspective projection of an object.
- (b) Briefly describe various quadratic surfaces.

1287  
 4080  
 92591  
2878 ✓

**[12 BENG - 3109]**

III/IV B.Tech. DEGREE EXAMINATION.

First Semester

Information Technology

Elective-1: COMPUTER GRAPHICS AND  
MULTIMEDIA

(Effective from the admitted batch of 2015-2016)

Time : Three hours

Maximum : 70 marks

First question is compulsory.

Answer any FOUR from the remaining questions.

All questions carry equal marks.

Answer all parts of any question at one place.

PART — A

1. (a) What is an output primitive? (2)
- (b) Give reflection matrix. (2)
- (c) What is polygon mesh? (2)
- (d) Define multimedia database. (2)
- (e) What is the multimedia file format? (2)

- (f) List the three main technologies for playing motion videos. (2)
- (g) Why we use geometric tables? (2)

PART — B

- 2. (a) Discuss about general pivot point rotation and general fixed point scaling. (7)
- (b) How to perform window to viewport coordinate transformations? (7)
- 3. (a) Explain briefly, the Sutherland-Hodgeman polygon clipping. (7)
- (b) How to detect visible surfaces by using Depth-Buffer method? Explain. (7)
- 4. (a) Discuss briefly about CMY color model. (7)
- (b) How Lines and polygon surfaces in a scene can be clipped against the viewport boundaries in 3D graphics? Explain briefly. (7)
- 5. (a) List out the applications of multimedia. (7)
- (b) Discuss how to define Image objects for multimedia systems. (7)

- 6. (a) What are the different types of image, audio and video file formats? (7)
- (b) Briefly discuss about the following multimedia i/o technologies. (7)
  - (i) Monitor
  - (ii) Digital cameras
- 7. (a) Explain the role of following in a distributed multimedia systems.
  - (i) Object directory service agent
  - (ii) Component service agent
  - (iii) User interface and service agent (7)
- (b) Explain the steps to create hypermedia messages? (7)