Indian Institute of Engineering Science and Technology Shibpur
Department of Computer Science and Technology
BTech(CST),Departmental Elective-I, 5th Semester, Mid Term examination, 2021

Computer Graphics (CS-3121)

Full marks: 30 **Time**: 45 minutes + Uploading

Read the following instructions carefully

- *Answer any three questions.*
- ***Use appropriate diagrams** wherever desired.*
- *On the top of the answer script write Name of the Examination, Name of the Subject, Subject Code, Date of Examination, Name of the Student, Examination Roll Number, G-Suite ID and Number of Sheets uploaded.*
- *Before uploading scanned copy of answer script, rename it as your **examination roll number.pdf***

1. (a) Discuss midpoint circle drawing algorithm.
   (b) Comment on the following statement:
   "Midpoint circle drawing algorithm is applicable for one octant of the circle only but for a midpoint ellipse drawing algorithm is applicable for one quadrant of the ellipse."

   [6+4]

2. (a) Discuss 'Scan line polygon fill' algorithm.
   (b) Fill an irregular region(not more than 10×10) with with pattern array $\begin{bmatrix}1 & 2\\ 1 & 2\end{bmatrix}$(where 1 and 2 are any two colours) and pattern size=2 pixels.

   [6+4]

3. (a) What are the properties of Bezier curve ?
   (b) Plot points of a quartic Bezier curve for at least 5 intervals of parameter range.

   [6+4]

4. (a) A point on XY plane is subjected to following transformations.
   i) Translation by a vector $[x_v, y_v]$.
   ii) Scaling by S.F (S_x, S_y).
   iii) Counter clockwise rotation at an angle α around the origin.
   Find the composite transformation matrix for the above transformations.
   (b) Plot an example of viewing transformation for any chosen shape using method of normalization. keep the size of both window and viewport not more than 10×10.

   [6+4]

T.Pal

Paper setter: T.Pal