Code No: 155AM **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, July/August - 2023

COMPUTER GRAPHICS

(Common to CSE, IT, CSIT, CSE(AI&ML), CSE(DS))

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	List out the input device.	[2]
b)	Write the drawbacks of scan line algorithm.	[3]
c)	Write the properties of homogeneous coordinates.	[2]
d)	How to perform general pivot point rotation and general fixed point scaling?	[3]
e)	What is quadratic surface?	[2]
f)	List out the types of basic illumination models.	[3]
g)	Summarize about sweep representations of 3-D objects.	[2]
h)	What is perspective projection?	[3]
i)	Explain raster animation method and its components.	[2]
j)	What are the advantages of back face detection method?	[3]

PART – B

(50 Marks)

2.a) List and explain the application areas of Computer Graphics.
b) Describe the characteristics of raster scan display devices. [5+5]

OR

3.a) Write DDA algorithm to draw a line and state its advantages and disadvantages.
b) Describe the Scan line polygon fill algorithm. [5+5]

4.a) Explain the working of Sutherland –Hodgeman polygon clipping algorithm with suitable example.
b) Describe about window to view-port coordinate transformation with an example. [5+5]

OR

5. Derive the 2D transformation matrix for rotation about an arbitrary point. [10]

6. Derive the transformation matrix for Bezier curve. [10]

OR

7.a) Explain about B-spline curve.
b) Compare Hermite curve, Bezier curve and B-spline curves. [5+5]

8.a) Explain about 3D viewing pipeline.
b) Derive the 3D transformation matrix for scaling. [5+5]

OR

9. Describe about the following 3-D geometric transformations:
a) Translations
b) Rotations. [5+5]

10.a) Discuss in detail about key frame system in detail.
b) Explain about the design of animation sequences. [5+5]

OR

11.a) Explain about area sub division method.
b) What are the advantages and disadvantages of back BSP tree method? [5+5]

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