ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : JANUARY 2021** (Academic Session: 2020 – 21)		
Name of the Program: (Example: B. Sc./BBA/MA/B.Tech.)	MCA	**Semester:** (I/III/ V/ VII/IX)	V
Paper Title :	Elective-I (Computer Graphics & Visualization)	**Paper Code:**	ECS53101
Maximum Marks :	40	**Time duration:**	3 hrs
Total No of questions:	8	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)			

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. **a)** What is clipping?
b) Mention one disadvantage of DDA line drawing algorithm.
c) What is geometric transformation?
d) Mention one application area of Orthographic projection.
e) What is an additive color model?

GROUP –B

Answer *any three* of the following $3 \times 5 = 15$

2. Given a clipping window A (20,20), B(60,20), C(60,40) and D(20,40), using Cohen Sutherland algorithm, find the visible portion of the line segment joining the point P(40,80) and Q(120,30). 5

3. a) Differentiate between orthographic and oblique projection. Mention at least three points of difference.

b) Define the importance of projection. 3+2

4. How can you perform 3D scaling of an object? Write down the 3D scaling matrix. 3+2

5. a) What is a fractal? Explain any one application area of fractals.

b) Rasterize a line starting at pixel (2,3) and ending at pixel (12,8) using DDA line drawing algorithm. (1+1)+3

GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

6. Explain Polygon surface and Polygon Mesh 3-dimensional object representation along with suitable diagram. 5+5

7. a) Consider an object ABCD with given co-ordinates A(10,10), B(60,10), C(60,60) and D(10,60). It is desired to double the size of object, keeping in mind that point 'A' remains the same. Find the co-ordinates of the transformed object.

b) What is the "Visible Surface Detection" problem?

c) Explain the Back face detection algorithm. 5+2+3

8. a) How do you represent a point in 3D and what are the advantages of homogeneous co-ordinates?
b) How will you represent a 3D object in matrix form? Explain with a suitable example. (2+2)+(2+4)
