

KADI SARVA VISHWAVIDYALAYA**MCA Semester-4 Examination, May 2014****MC 19 – Computer Graphics****Date:** 10/05/2014**Time:** 3 Hours**Total Marks:** 50**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

1. (A) What is Refresh CRT? Explain its functioning principle. [05]
- (B) Explain the DDA line drawing algorithm with example. [05]

2. (A) Answer the following: [06]
 - (i) List various applications of computer graphics.
 - (ii) What are the advantages of Bresenham's line drawing algorithm over the DDA line drawing algorithm?
 - (iii) List various line attributes.
 - (iv) What is clipping?
 - (v) What are window and viewport?
 - (vi) Differentiate parallel and perspective projections.
- (B) (i) Differentiate random scan display and raster scan display. [02]
- (ii) Show that any two successive 2D translations are commutative. [02]

OR

- (B) (i) Consider two different raster systems with resolutions of 640 by 480 and 1280 by 1024. What size frame buffer (in bytes) is needed for each of these systems to store 12 bits per pixel? [02]
 - (ii) Explain odd-even rule for inside-outside test. [02]
3. (A) Explain the mid-point circle algorithm for circle $(x - 3)^2 + (y - 5)^2 = 16$. [05]
 - (B) Perform a rotation of triangle A(0,0), B(1,1) and C(5,2) about the origin and about pivot point P(-1, -1). [05]

OR

3. (A) What is the difference between boundary-fill and flood-fill area filling methods? Explain any one in detail. [05]
- (B) Magnify the triangle with vertices A(0,0), B(1,1) and C(5,2) to twice its size in the both directions while keeping B(1,1) fixed. [05]

4. (A) Explain Liang-Barsky line clipping algorithm. [05]
- (B) Explain various 3-D display methods which are used to improve the appearance of a 3-D object. [05]

OR

4. (A) Discuss Sutherland-Hodgeman polygon clipping algorithm for convex polygons. [05]
- (B) Explain general rotation in 3D and write 4 x 4 matrix equation for it. [05]

5. (A) List various 3D object representation methods and explain any one in detail. [05]
- (B) Explain in brief various issues with design and implementation of a VR system. [05]

OR

5. (A) Discuss scaling transformation about origin and fixed point in 3-D and write matrix equation for it. [05]
- (B) What are virtual reality systems? Describe the basic components of a typical virtual reality system. [05]
