

MCA-301**June – Examination 2020****MCA (III Year) Examination****Computer Graphics****Paper : MCA-301***Time : 3 Hours]**[Maximum Marks : 80*

Note :- The question paper is divided into three Sections A, B and C. Write answers as per the given instructions.

Section-A**8×2=16****(Very Short Answer Type Questions)**

Note :- Answer all questions. As per the nature of the question delimit your answer in one word, one sentence or maximum up to **30** words. Each question carries 2 marks.

1. (i) What is the Aspect Ratio ? Give one example.
- (ii) Give an example of two-dimensional shearing.
- (iii) List any *two* properties of B-Spline curves ?
- (iv) What is composite transformation ? Give an example.

- (v) Give any *two* drawbacks to the CRT.
- (vi) Write the full form of DDA.
- (vii) What is Refresh Rate ?
- (viii) List any *two* output devices for graphics.

Section-B **4×8=32**

(Short Answer Type Questions)

Note :- Answer any *four* questions. Each answer should not exceed **200** words. Each question carries 8 marks.

2. Write a short note on Antialiasing.
3. Explain the difference between Raster Scan System and Random Scan System.
4. What is a bezier curve ? Describe various properties of the bezier curve.
5. Explain the concept of parallel projection as perspective projection. Perform a perspective projection onto the $z = 0$ plane of the unit cube, where the center of projection is at $X_c = -10$, $Y_c = -10$ and $Z_c = -10$.
6. Describe the z-buffer algorithm for visible surface deflection with a suitable example.
7. What is the difference between dot matrix and inkjet printers ? Explain in brief.

8. Explain the Beam Penetration and Shadow Mask strategies in CRT monitors.
9. Explain the RGB color model. Also, explain the relationship between the RGB color model and the CMY color model.

Section-C **2×16=32**

(Long Answer Type Questions)

Note :- Answer any *two* questions. You have to delimit your each answer maximum up to **500** words. Each question carries 16 marks.

10. Give the Bresenham's line drawing algorithm. Explain with suitable example.
11. A triangle is located at P(10, 40), Q(40, 40), R(40, 30). Work out the transformation matrix which would rotate the triangle by 90 degrees counterclockwise about the point Q. Find the coordinates of the rotated triangle.
12. What do you mean by projection ? Describe different types of projection with examples. Also, explain what are various projection anomalies ?
13. Write short notes on the following :
 - (a) Boundary fill algorithm
 - (b) Flood fill algorithm