

- (ii) Define the following concepts along with their importance: Window, Viewport and Window to Viewport transformation.
- 7. (i) How point clipping is performed ? Explain with the help of inbuilt function prototype.
- (ii) With the help of an example, explain how Cohen Sutherland algorithm can be used to perform clipping on the given objects.

Unit-IV

- 8. (i) Explain why three-dimensional views are called as projections. How parallel projection can be a useful approach for producing 3D views.
- (ii) Briefly explain the concept of B-Spline curves.
- 9. (i) Write down the 3D rotation matrices around x-and z-axis.
- (ii) How shading methods can be used to produce more realistic three-dimensional objects ? Write down salient features of Phong shading.

67106

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RR-469

Roll No. :

Total No. of Questions : 9] [Total No. of Pages : 4

67106

MCA (Regular) 3rd Semester
 Examination, February-2022
 (Current CBCS Scheme w.e.f. Dec-2017-18)
 Paper-17MCA3XCI

COMPUTER GRAPHICS

Time : Three Hours] [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note - Attempt five questions in all, selecting one question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

- 1. (i) Discuss how Computer Graphics can be a great help to education and training domain.
- (ii) Differentiate between emissive and non emissive display devices with one example for each.

67106

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RR-469 P.T.O.

- (iii) Define the Nyquist frequency in reference to anti-aliasing.
- (iv) Explain the working principle of DDA line algorithm.
- (v) What important role does cell array plays in generating graphics output ?
- (vi) Differentiate between Convex and Concave images in reference to clipping.
- (vii) What do you mean by vanishing point ?
- (viii) Briefly present different components of MATLAB IDE.

Unit-I

2. (i) Why are CRT video display monitors called as refresh CRT ? Which factor in CRT decides the refreshing rate ?
- (ii) Briefly discuss the following concepts related to color models: RGB, CMY and Gray scale levels.
3. (i) Raster scan systems are the first choice for running scientific applications. Comment.
- (ii) What do you mean by interfacing ? How

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RR-469

it can solve the problems associated to CRT display ?

Unit-II

4. What is symmetry of circles ? Elaborate how this property can be used to generate circle by using Mid-point Circle algorithm in terms of decision parameter, by considering a circle with radius = 10 and in first quadrant from $x = 0$ to $x = y$.
5. (i) Formulate the following geometric transformations with one example each. Rotation about Pivot point and Shearing.
- (ii) Why is it recommended to transform all geometric transformations into homogeneous coordinates ? Write down matrices for reflection and translation in homogeneous coordinates.

Unit-III

6. (i) List down any five advantages and working procedure of Scan Line polygon filling algorithm.

67106

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RR-469 P.T.O.