Printed Pages:01 **Sub Code: NCS403**

Paper Id: | 1 | 1 | 0 | 2 | 4 | 9 | **Roll No.** | | | | | | | | | | |

B.TECH
(SEM IV) THEORY EXAMINATION 2018-19
COMPUTER GRAPHICS

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. What are the merits and demerits of LCD?
b. What is the role of pixel and frame buffer in graphic devices?
c. What is the difference between Homogeneous Transformation and Combined Transformation?
d. Why are Homogeneous co-ordinates used for transformation computations in computer Graphics?
e. What is the difference between a window and a view port?
f. What do you understand by shadow mask CRT?
g. What do you mean by composite transformation?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Demonstrate Cohen Sutherland line clipping method with example.
b. What is window to view port coordinate transformation? What are the issues related to multiple windowing.
c. What are the difference between Raster scan and Random scan display?
d. Explain Phong and Warn Illumination model in detail.
e. What are the Geometric primitives in 3-D graphics?

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Draw a simple Illumination model. Include the contribution of Diffuse, Ambient and Specular Reflection.
(b) Explain the concept of Transparency and shadows in Hidden line and surfaces.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the various 3-D clipping methods with example.
(b) Give the brief description of transformation in 3-D graphics.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Obtain the mirror reflection of the triangle formed by the vertices A(0,3),B(2,0) and C(3,2) about the line passing through the points (1,3) and (–1, –1).
(b) Explain Bresenham's algorithm of line drawing.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Obtain a combined transformation matrix if a rotation is perform about an arbitrary point.
(b) Prove that 2 successive 2-D rotation are additive ie., $R(\theta 1).R(\theta 2) = R(\theta 1 + \theta 2)$

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) List the advantages and disadvantages of back face detection and A-buffer method. Write the algorithm for back face detection.
(b) Compare and contrast among spline, B-spline and Bezier algorithms for curve generation and write the algorithm for Bezier curve generation.