COMPUTER GRAPHICS LABORATORY WITH MINI PROJECT
(Effective from the academic year 2018 -2019)
SEMESTER – VI

Course Code	**18CSL67**	**CIE Marks**	40
Number of Contact Hours/Week	0:2:2	**SEE Marks**	60
Total Number of Lab Contact Hours	36	**Exam Hours**	03

Credits – 2

Course Learning Objectives: This course (18CSL67) will enable students to:

- Demonstrate simple algorithms using OpenGL Graphics Primitives and attributes.
- Implementation of line drawing and clipping algorithms using OpenGL functions
- Design and implementation of algorithms Geometric transformations on both 2D and 3D objects.

Descriptions (if any): --

Installation procedure of the required software must be demonstrated, carried out in groups and documented in the journal.

Programs List:

PART A

Design, develop, and implement the following programs using OpenGL API

1.	Implement Brenham's line drawing algorithm for all types of slope. Refer:Text-1: Chapter 3.5 Refer:Text-2: Chapter 8
2.	Create and rotate a triangle about the origin and a fixed point. **Refer:Text-1: Chapter 5-4**
3.	Draw a colour cube and spin it using OpenGL transformation matrices. **Refer:Text-2: Modelling a Coloured Cube**
4.	Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing. **Refer:Text-2: Topic: Positioning of Camera**
5.	Clip a lines using Cohen-Sutherland algorithm **Refer:Text-1: Chapter 6.7** **Refer:Text-2: Chapter 8**
6.	To draw a simple shaded scene consisting of a tea pot on a table. Define suitably the position and properties of the light source along with the properties of the surfaces of the solid object used in the scene. **Refer:Text-2: Topic: Lighting and Shading**
7.	Design, develop and implement recursively subdivide a tetrahedron to form 3D sierpinski gasket. The number of recursive steps is to be specified by the user. **Refer: Text-2: Topic:** sierpinski gasket.
8.	Develop a menu driven program to animate a flag using Bezier Curve algorithm **Refer: Text-1: Chapter** 8-10
9.	Develop a menu driven program to fill the polygon using scan line algorithm

PART B MINI PROJECT

Student should develop mini project on the topics mentioned below or similar applications using Open GL API. Consider all types of attributes like color, thickness, styles, font, background, speed etc., while doing mini project.

(During the practical exam: the students should demonstrate and answer Viva-Voce)

Sample Topics:

Simulation of concepts of OS, Data structures, algorithms etc.

Laboratory Outcomes: The student should be able to:

- Apply the concepts of computer graphics

- Implement computer graphics applications using OpenGL
- Animate real world problems using OpenGL

Conduct of Practical Examination:

- Experiment distribution
  - For laboratories having only one part: Students are allowed to pick one experiment from the lot with equal opportunity.
  - For laboratories having PART A and PART B: Students are allowed to pick one experiment from PART A and one experiment from PART B, with equal opportunity.
- Change of experiment is allowed only once and marks allotted for procedure to be made zero of the changed part only.
- Marks Distribution *(Courseed to change in accoradance with university regulations)*
  - o) For laboratories having only one part – Procedure + Execution + Viva-Voce: 15+70+15 = 100 Marks
  - p) For laboratories having PART A and PART B
    - i. Part A – Procedure + Execution + Viva = 6 + 28 + 6 = 40 Marks
    - ii. Part B – Procedure + Execution + Viva = 9 + 42 + 9 = 60 Marks

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