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**ACHARYA INSTITUTE OF TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

(Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi and Accredited by NBA & NAAC)  
 Acharya Dr. Sarvepalli Radhakrishnan Road, ACHIT Nagar Post,  
 Soladevanahalli, Bengaluru - 560107

**Computer Graphics and Fundamentals of Image processing**  
**INTERNAL ASSESSMENT-II QUESTION PAPER**  
 [Academic Year: EVEN 2023-24]

**Subject Name: Computer Graphics and Fundamentals of Image processing**      **Subject Code: 21CS63**  
**Branch, Semester & Section: CS&E, VI [Common to all sections]**      **Date: 27-06-2024**

**Max Marks: 20M**

**Timings: 9:40AM-10:40AM (60-Mins)**

**Note: Question no 7 is compulsory.**

Q. No	QUESTION	MARKS	RBT	CO
1	Write an OpenGL segment to illustrate the working of glutKeyboardFunc and glutMouseFunc API's	5M	2	CO3
	OR			
2	Illustrate the logical classification of input devices according to data types with examples	5M	2	CO3
3	Apply 3D reflection relative to a selected reflection axis and 3D shearing relative to a selected reference position to a unit 3D Cube.	5M	3	CO2
	OR			
4	Apply 3D homogenous transformation to scale an object wrt to a pivot point. For the triangle A (3, 2, 2) B (6, 2, 2), C (6, 6, 2), rotate it anti-clockwise direction by 90 degree about z axis keeping A (3, 2, 2) fixed. Give the matrices for the original and rotated triangle.	5M	3	CO2
5	Write an OpenGL code segment to create hierarchical menus with the given items a) Submenu draw with three items-circle, triangle and square. b) Main menu with 3 items-solid color, interpolation and quit. And also function/API to connect it with the mouse.	5M	3	CO3
	OR			
6	Analyze animation techniques used for creating a character and periodic Motions	5M	3	CO3
7	Apply appropriate algorithm to draw a 3D unit cube at origin, rotate it by 45 degrees on z-axis. Translate the original polygon (without rotation) by 10 Units on x axis and scale by a factor of (2, 2, 3). Give the matrices for the original and transformed 3d cube.	5M	3	CO2

**COURSE OUTCOMES :On Completion of the course, the students will be able to:**

CO2	Apply 2D and 3D geometric transformations using OpenGL APIs to transform objects.
CO3	Analyze GUI, Input interactions and animation techniques to animate the created objects.

Signature of the Course Coordinator	Signature of the Module Coordinator	Signature of the Test Coordinator	Signature of the HOD
Mrs. Varalakshmi B D Assistant Professor, CS&E 	 Mrs. Sneha N P Assistant Professor Department of CS&E	Mrs. Vijayalakshmi SA  Mrs. Rajani Kodagali Assistant Professor Department of CS&E	 Dr. Ajith Padyana Professor & Head Department of CS&E
Mr. Jawahar Jonathan Assistant Professor, CS&E			