Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

# End Term (Even) Semester Examination May-June 2025

Roll no. 2292104

Name of the Program and semester: BCA 6th
Name of the Course: Computer Graphics
Course Code: TBC601

Time: 3-hour Maximum Marks: 100

**Note:**

*(i)* All the questions are compulsory.
*(ii)* Answer any two sub questions from a, b and c in each main question.
*(iii)* Total marks for each question are 20 (twenty).
*(iv)* Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)
a. Explain the single and multiple surfaces methods to identify the hidden surfaces. (CO4)
b. Find out the line coordinates for the points (2, 2) and (10, 8) using DDA line algorithm. (CO2)
c. Analysis the performance of 2D successive rotation and transformation. (CO3)

Q2. (2X10=20 Marks)
a. Draw taxonomy of projection and explain with their characteristics and types. Differentiate between projection types with suitable example. (CO6)
b. Write the steps of Sutherland Hodgman algorithm for convex polygon clipping where orientation is positive. (CO5)
c. Rotate the object about clock wise direction whose points are A (1, 1), B (1, 7), C (3, 3) by 45-degree angle about A (1, 1) point. (CO3)

Q3. (2X10=20 Marks)
a. Write the steps for Boundary-Fill and Flood-Fill and what are the advantages of Boundary-Fill over Flood-Fill. (CO5)
b. If vector |A+B| = |A-B|, find out the angle between A and B vectors. How to compute the angle between two vectors explain with suitable example. (CO2)
c. How 3D rotation is performed about x-axis, y-axis and z-axis along with x', y' and z' values. (CO4)

Q4. (2X10=20 Marks)
a. Explain the different types of animation techniques used in computer graphics. Also explain output primitives in Computer Graphics. (CO6)
b. Explain the devices where the electron guns are the two or more. Differentiate between LCD and LED display devices. (CO1)
c. Explain graphical kernel system features and how it helps in creating graphical applications? (CO6)

Q5. (2X10=20 Marks)
a. How 2D shearing transformation operation performed about x and y axis explain with suitable example? (CO4)
b. Compute the circle arc coordinate for angle 450- 900, where the radius is 12 using midpoint circle generation algorithm. (CO2)
c. Explain different methods for anti-aliasing? How these methods help to reduce the aliasing effects? (CO1)

**Note** For the question paper setters:

- Question paper should cover all the COs of the course.
- Please specify COs against each question.