B.SC. SIXTH SEMESTER (PROGRAMME) EXAMINATIONS, 2021

Subject: Mathematics   **Course ID: 62110**

Course Code: SP/MTH/ 604/SEC-4   **Course Title: Computer Graphics**

Full Marks: 40   **Time: 2 Hours**

The figures in the margin indicate full marks

Notations and symbols have their usual meaning.

1. **Answer *any five* from the following questions:**   **(2 ×5=10)**

   a) Define Computer graphics.

   b) What are input and output devices in computer graphics?

   c) What is transformation?

   d) What is scaling?

   e) What is persistence?

   f) Why Bresenham's algorithm is better than DDA?

   g) Define clipping.

   h) What do you mean by resolution?

2. **Answer *any four* from the following questions:**   **(5×4=20)**

   a) What are the advantages of laser printers? Write down the differencebetween random scan and raster scan display?   2+3=5

   b) Define image and object. How an image is represented mathematically?

   c) Draw a line from $(0,0)$ to $(-6,-4)$ byusing Bresenham's line drawing algorithm.

   d) Define aspect ratio. A screen has 1024 scan lines with aspect ratio $4:3$ and bit depth 16. Then how many bit per pixel are required to show 60 frames per second?   2+3=5

   e) Explain Cohen-Sutherland line clipping algorithm with suitable example.

   f) Explain DDA line drawing algorithm with an example.

3. **Answer *any one* of the following questions:**   **(10x1=10)**

   a) Write midpoint circle generation algorithm. Draw circle having center $(0,0)$ and radius 9 using this algorithm. Briefly discuss about anti-aliasing technique.   6+4=10

   b) What is the significance of geometric transformations? Explain the procedure to rotate on object about X and Y axis.

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