PA-23

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S.E. (Computer/Artificial Intelligence & Data Science/Computer Science & Design Engineering)
COMPUTER GRAPHICS
(2019 Pattern) (Semester - I) (210244)

Time : 1 Hour]   *[Max. Marks : 30*

Instructions to the candidates:

1) *Answer Q.1 or Q.2 and Q.3 or Q.4 and Q.5 or Q.6.*
2) *Neat diagram must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*

Q1) a) Define the terms: color depth, scan conversion refresh rate. pixel. **[4]**

    b) Differentiate between Raster Scan and Random Scan. **[4]**

OR

Q2) a) Define the terms: resolution, aspect ratio, frame buffer, refresh rate. **[4]**

    b) Compare DDA line drawing Algorithm with Bresenhams Line drawing algorithm. **[4]**

Q3) a) Write short note on "Handling Keyboard inputs with GLUT". **[6]**

    b) Explain significance of error term in Bresenham's circle drawing algorithm. Explain its mathematical derivations. **[6]**

OR

Q4) a) Describe OpenGL architecture with block diagram in detail. **[6]**

    b) Explain Bresenham's circle drawing algorithm in detail. **[6]**

Q5) a) Write and explain with example Sutherland-Hodgeman clipping algorithm. **[5]**

b) Let ABCD be the rectangular window with A(20, 20), B(90, 20), C(90, 70), and D(20, 70). Find region codes for endpoints and use the Cohen-Sutherland algorithm to clip the lines : (i) P1 P2 with P1 (10, 30), P 2 (80, 90). **[5]**

OR

Q6) a) Explain with an example Boundary fill Algorithm. **[5]**

b) Clip the line PQ having coordinates P(4, 1) and Q(6, 4) against the clip window having vertices A(3, 2), B(7, 2) C(7, 6) D(3, 6). Use cohen-sutherland algo. **[5]**

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