P1604

[6002]-234

S.E. (Artificial Intelligence and Machine Learning)
COMPUTER GRAPHICS
(2019 Pattern) (Semester - IV) (218555)

Time : 2½ Hours]   *[Max. Marks : 70*
Instructions to the candidates:
   1) *Answers Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
   2) *Neat diagrams must be drawn wherever necessary.*
   3) *Figures to the right indicate full marks.*
   4) *Assume Suitable data if necessary.*

Q1) a) Use the Cohen Sutherland Line Clipping Algorithm with the help of region codes to clip a line AB with A(50,30), B(110,70) and PQ with P (30,70), Q (90,30) to clip a line against a window with lower left-hand corner (40,40) and Upper right-hand corner (100,80). Show Graphic Representation of Original and Clipped Line. **[9]**

    b) What is projection? Explain with diagram, oblique - Cavalier, Cabinet, Orthographic-isometric, diametric, trimetric Parallel projections. **[9]**

<div align="center">OR</div>

Q2) a) Let ABCD be the rectangle window with A (150,150) B (150,200), C (200,200) and D (200,150).Use Cohen Hodgeman polygon clipping algorithm to clip the convex polygon PQR with P (165,240), Q (180,90), R (100,175) and find the final coordinates of the clipped polygon. **[9]**

    b) Explain the basic transformation techniques in 3D Graphics **[9]**
       i)   Rotation
       ii)   Translation
       iii) Reflection about XY Plane

Q3) a) Explain in detail with Diagram **[9]**
       i)   RGB Color Model
       ii)   CIE Chromaticity Diagram,
       iii) Color Gamut

    b) Define Shading. Compare Constant Intensity, Halftoning, Gouraud Shading and Phong Shading algorithm. **[8]**

<div align="center">OR</div>

Q4) a) What is a segment? Why do we need segments? Explain the complete process of **[9]**

    i) Segment creation,

    ii) Segment Deletion and

    iii) Segment Renaming.

  b) Explain in detail combined diffuse and specular reflections with multiple light sources. **[8]**

Q5) a) Write short note on Hilbert's and Koch Curve along its Topological and Fractal Dimensions. **[9]**

  b) Write short note on **[9]**

    i) Design of animation sequence

    ii) Frame-by-Frame Animation techniques

<div align="center">OR</div>

Q6) a) Explain in detail with diagram Bezier curve generation using midpoint subdivision method. **[9]**

  b) What is interpolation? Explain the process of curves Approximation.

    [9]

Q7) a) What is the different usage of Virtual Reality? Explain in detail. **[6]**

  b) What is Haptics Rendering Pipeline Modeling in Virtual Reality. **[6]**

  c) What is kinematic modeling in a Virtual Reality? **[5]**

<div align="center">OR</div>

Q8) a) What is graphics rendering pipeline in a Virtual Reality system. **[6]**

  b) Explain gesture interfaces in Virtual Reality. **[6]**

  c) Explain 3D position trackers.

    [5]

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