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Total Number of Pages : 02

B. Tech
RCS5D006

5th Semester Regular / Back Examination: 2021-22

COMPUTER GRAPHICS

BRANCH(S): CSE, CST, IT

Time : 3 Hour

Max Marks : 100

Q. Code : OF413

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q1 Answer the following questions :

(2 x 10)

- What is interactive computer graphics?
- Differentiate half toning vs. dithering.
- Define viewing transformation and composite transformation.
- What do you mean by animation and morphing?
- Define hypermedia.
- Differentiate raster scan display vs. random scan display.
- State four applications of computer graphics.
- Differentiate window vs. view port.
- State four properties of light.
- What do you mean by affine transformation?

Part-II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- What is a Bezier curve? Given $P_0(1,1)$, $P_1(2,3)$, $P_2(4,3)$, $P_3(3,1)$ as vertices of Bezier curve. Determine three points on Bezier curve and draw the curve.
- Explain back-face removal algorithm for hidden surface elimination.
- What is a B-spline curve? List the properties of B-spline curve.
- What is scan conversion? Draw a line from (0,0) to (6,6) using DDA line drawing algorithm.
- A polygon has four vertices A(20,10), B(60,10), C(60,30), D(20,30). Calculate the vertices after applying a transformation matrix to double the size of polygon with point A located at the same place.
- Write short notes on fractal geometry classification.
- Explain Z-buffer and A-buffer algorithms.
- Find out the reflection of the point P(10,20) about the line $x=4$.
- Describe Bresenham's line drawing algorithm.
- What is the use of ray tracing methods? Describe basic ray tracing algorithm in detail.
- Discuss Cohen-Sutherland line clipping algorithm with a suitable example.
- Differentiate Gouraud Shading vs. Phong Shading.

- i) Explain the different components of a port with a neat sketch.
- j) Discuss the economics of inland waterways transportation in India.
- k) What are the factors to be considered for the selection of harbour?
- l) Discuss different components of docks with a neat sketch.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

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| Q3 | a) | Draw a neat sketch of right-hand turnout and discuss its constituents. | (8) |
| | b) | Draw a typical cross-section of a permanent way. Discuss in brief the basic functions of various components of railway track. | (8) |
| Q4 | | Enlist and discuss the factors to be considered for the selection of the site of an airport. | (16) |
| Q5 | | Classify different types of the breakwater. Explain any two in detail. | (16) |
| Q6 | | Discuss the requirements of the harbours and classify them depending upon the utility. | (16) |