Total No. of Questions—**12**] [Total No. of Printed Pages—**4**

| Seat No. | |
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# [4757]-188

## S.E. (Computer) (Second Semester) EXAMINATION, 2015

## COMPUTER GRAPHICS

## (2008 PATTERN)

**Time : Three Hours** **Maximum Marks : 100**

***N.B.*** **:—** (*i*) Answer any *three* questions from each Section.

(*ii*) Answers to the two Sections should be written in separate answer-books.

(*iii*) Neat diagrams must be drawn wherever necessary.

(*iv*) Figures to the right side indicate full marks.

## SECTION I

**1.** (*a*) Explain Bresenham's circle drawing algorithm with mathematical derivation. [10]

(*b*) Explain Random scan display. [4]

(*c*) What is aliasing and antialiasing ? [4]

P.T.O.

*Or*

**2.** (*a*) Explain Bresenham's line drawing algorithm with illustration. [8]

(*b*) Explain the features of the following : [6]

(*i*) mouse

(*ii*) joystick

(*iii*) light pen

(*c*) Explain Stroke method and Bitmap method of character generation. [4]

**3.** (*a*) What are the different methods for testing pixels inside and outside the polygons ? [8]

(*b*) Explain Sutherland Hodgeman polygon clipping algorithm with example. [8]

*Or*

**4.** (*a*) What is the need for clipping ? Explain Cohen-Sutherland outcode algorithm. [8]

(*b*) Explain any *two* polygon filling algorithms. [8]

**5.** (*a*) Explain parallel projection and its types. [8]

(*b*) Write a short note on 2-D rotation and 2-D shear transforms. [8]

*Or*

**6.** (*a*) Find the transformation matrix of the triangle A(1, 0), B(0, 1), C(1, 1) by rotating 45° about the origin and then translate 1 unit in $x$ direction and 1 unit in $y$ direction. [8]

(*b*) Write the transformation matrix in 3-D for : [8]

(*i*) Translation

(*ii*) Scaling

(*iii*) Rotation about $x$-axis

(*iv*) Rotation about $z$-axis.

## SECTION II

**7.** (*a*) Write the algorithm for the following : [8]

(*i*) Change of visibility attribute of segments

(*ii*) Delete a segment

(*iii*) Delete all segments.

(*b*) Compare conventional and computer based animation. [8]

*Or*

**8.** (*a*) What are the advantages of using segmented display file ? Explain with examples the functions needed to maintain a segmented display file. [8]

(*b*) Explain in brief the basic guidelines of animation. [8]

**9.** (*a*) Explain Painter's algorithm. [8]

(*b*) Describe : [8]

(*i*) Diffused illumination

(*ii*) Point source illumination.

*Or*

**10.** (*a*) Explain Warnock's algorithm. [8]

(*b*) Write a short note on Ray-Tracing. [8]

**11.** Write short notes on any *three* of the following : [18]

(*i*) Properties of Bezier curve

(*ii*) Fractal geometry

(*iii*) True curve generation

(*iv*) Interpolating algorithm.

*Or*

**12.** Write short notes on any *three* of the following : [18]

(*i*) B-spline curve

(*ii*) Blending functions

(*iii*) Fractal lines and surfaces

(*iv*) Koch curve.