No. of Printed Pages—2

51 (CG)

[18–HRGPKAC–M3S]

MCA/MSC IT 3rd Semester Exam., 2018

COMPUTER GRAPHICS

[MCA/MSC IT(S3)12]

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

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

(a) Define digital coding. Mention the types of digital coding.

(b) Describe the role of parity in computer graphics.

(c) How is view position in a space represented?

(d) How much time is required to scan individual pixel during screen refresh on a raster system with resolution 600 × 400 and refresh rate of 60 Hz?

(e) What is the use of fractals in graphics application?

(f) What are polygon surfaces?

2. Answer any *three* from the following questions : 4×3=12

(a) Briefly discuss beam-penetration method.

(b) Describe the working of impact and non-impact printers.

(c) Explain composite and affine transformations.

(d) State the 3D-transformation function and explain its various parameters.

3. Answer any *three* from the following questions : 6×3=18

(a) Explain parallel and perspective projections.

(b) Write the basic difference between random scan and raster scan systems.

(c) What is halftoning? Explain how halftoning reduces the size of an image.

(d) What are blobby objects? With the help of mathematical formulation describe how they are formed.

4. Answer any *four* from the following questions : 10×4=40

(a) Explain the following : 5×2=10

(i) Line drawing algorithm

(ii) Line clipping algorithm

(b) A triangle is defined by

$$\begin{pmatrix} 2 & 4 & 4 \\ 2 & 2 & 4 \end{pmatrix}$$

Find the transformed coordinates after the following transformations :

(i) 90° rotation about the origin

(ii) Reflexion about line $Y = -X$

(c) What are window and viewport? Retrieve equation for the scaling factor to map the window to viewport in 2D viewing systems. 4+6=10

(d) Write properties of Bezier curve and also mention its various types. 4+6=10

(e) Explain any curve clipping algorithm with suitable example.

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