



Name :

Roll No. :

Invigilator's Signature :

**CS/M.Tech-IT(SE)/SEM-3/MSE-302C/2009-10
2009**

COMPUTER GRAPHICS AND MULTIMEDIA

Time Allotted : 3 Hours

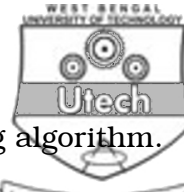
Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* of the following.

1. a) Explain briefly the RGB and CMY colour model.
- b) Write down the names of different image file formats.
- c) Give examples of some graphics device.
- d) What do you mean by resolution of an image ?
- e) Compute the size of a 640×480 image at 240 pixels per inch.
- f) Find the CMY coordinates of a colour at (0.2, 1, 0.5) in RGB space.
- g) What is image's aspect ratio ? $7 \times 2 = 14$



2. a) Describe the Bresenham's circle drawing algorithm. 7
- b) Find the matrix representation of a point about origin.
Write the matrix representation of translation. 5 + 2
3. a) Prove that the uniform scaling ($S_x = S_y$) and a rotation form a commutative pair of operations but independently scaling and rotations are themselves not commutative. 6
- b) Show that transformation matrix for a reflection about the line $y = -x$ is equivalent to a reflection relative to the y - axis followed by a counter-clockwise rotation of 90° . 8
4. a) What do you mean by viewport ? 2
- b) Explain the Cohen-Sutherland line clipping algorithm. 8
- c) Clip the line CD using Midpoint subdivision algorithm in a plain PQRS. Choose appropriate coordinate of the end points and use tolerance level 0.1. 4
5. a) Describe with figure, the structure and functions of a Cathode Ray Tube (CRT). 8
- b) Distinguish between Raster Scan Display and Random Scan Display. 3
- c) What do you mean by homogeneous coordinates ? 3



6. a) Describe the Bresenham's Line drawing algorithm (only the algorithm). 7
- b) Describe the mid-point-sub division algorithm. 7
7. a) Find the equation of Bezier curve which passes through points (0, 0) and (- 2, 1) and is controlled through points (7, 5) and (2, 0). 8
- b) Four points $P_0 (a, b)$, $P_1 (20, 50)$, $P_2 (40, 40)$, $P_3 (70, c)$ are available for drawing a B-spline curve segment. Compute the values of a, b, c such that the curve starts from the point (21, 43) and terminate with slope $\frac{1}{2}$. 6
8. a) Describe the basic MPEG specification for video. 8
- b) Discuss elaborately with illustration the difference between HTML & DHTML. 6
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