



Name :

Roll No. :

Invigilator's Signature :

CS / B.TECH(CSE) / SEM-6 / CS-603 / 2012

2012

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.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

$$10 \times 1 = 10$$

- i) Raster means
 - a) series of parallel lines
 - b) series of parallel blocks
 - c) series of parallel medium
 - d) series of parallel sweeps.
- ii) Physical Aspect Ratio is termed as
 - a) Ratio of width of the frame to its height
 - b) Ratio of width of pixel to its height
 - c) Ratio of width of block to its height
 - d) All of these.



- iii) The maximum number of dots that can be displayed without overlap on a CRT is referred to as
- a) Refresh Rate b) Interlacing
c) Screen Resolution d) None of these.
- iv) Achromatic light is
- a) Quantity of light b) Quantity of colour
c) Quantity of darkness d) Quantity of shading.
- v) How many channels are specified by MIDI standards ?
- a) 16 b) 24
c) 32 d) 48.
- vi) The memory area which holds a set intensity values for all the screen points is
- a) frame buffer b) refresh RAM
c) video cache d) RAM.
- vii) Using odd parity rule, if the number of polygon edges crossed by a line, from a point is odd, then
- a) P is an exterior point
b) P is an interior point
c) P is on the edge point
d) odd parity-rule alone is not sufficient to judge.
- viii) If S_x and S_y are scaling factors applied in X and Y directions respectively, on $P(x, y)$, the output point coordinates after applying scaling operation is
- a) $x_1 = 1/x.S_x$, $y_1 = y.S_y$
b) $x_1 = x + S_x$, $y_1 = y + S_y$
c) $x_1 = x.S_x$, $y_1 = 1/y.S_y$
d) $x_1 = x.S_x$, $y_1 = y.S_y$.



- ix) Aliasing means
- a) rendering effect
 - b) shading effect
 - c) staircase effect
 - d) cueing effect.
- x) Perspective projection is characterised by the
- a) view plane alone
 - b) direction of projection and the view plane
 - c) centre of projection and the view plane
 - d) centre of projection alone.

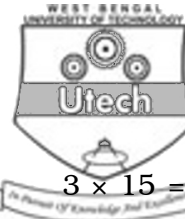
GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What are the differences between raster scan and vector scan technique ?
3. Perform a 30° rotation of a triangle A (2, 2), B (3, 3), C (6, 5) about
 - a) the origin
 - b) a point P (- 8, - 5). $2 + 3$
4. Derive mid-point line drawing algorithm.
5. Briefly explain the different types of file format used in image compression.
6.
 - a) What is resolution of an image ?
 - b) Compute the size of a 640×480 image at 240 ppi.
 - c) What is the relationship between RGB and CMYK colour model ? $1 + 2 + 2$
7. Describe how a 3D object is presented on the screen using perspective projection. Take a simple object from illustration.

GROUP – C



(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

8. a) Why is a homogeneous co-ordinate system needed in transformation matrix ?
b) Derive the transformation matrix for rotation about any axis.
c) Explain the reflection of a 2D figure on $y = m x + c$. Derive its component matrix.
d) What do you mean by shearing ? $2 + 5 + 6 + 2$
9. a) Using mid-point circle drawing algorithm draw a circle with radius of 10 units.
b) Derive the algorithm of Flood-fill.
c) What do you mean by hidden surface removal ? $7 + 5 + 3$
10. a) Explain the term 'control points'.
b) What do you mean by hidden surface removal ? Write down the z-buffer algorithm.
c) Define morphing and masking. $3 + 7 + 5$
11. a) What is MIDI ? Discuss the advantages of MIDI over digitization. $2 + 3$
b) Describe the method of digitization. 6
c) What is the difference between :
i) lossy compression and lossless compression ?
ii) video and animation ? 4
12. Write short notes on any *three* of the following : 3×5
a) Virtual Reality
b) MPEG
c) Projection
d) Z-buffer algorithm
e) Painter algorithm
f) Anti-aliasing.
-
-