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CC-14 (Theory): Computer Graphics
SEMESTER – VI

1. Which devices provides positional information to the graphics system?

- a) Input devices
- b) Output devices
- c) Pointing devices
- d) Both a and c

Answer: d

Explanation: Input devices positional information to the system they often called pointing devices.

2. The number of pixels stored in the frame buffer of a graphics system is known as

- a) Resolution
- b) Depth
- c) Resolution
- d) All of the above

Answer: d

Explanation: Number of pixels determines the resolution.

3. In which system, the Shadow mask methods are commonly used

- a) Raster-scan system
- b) Random-scan system
- c) Both a and b
- d) None of the above

Answer: a

Explanation: Raster-scan system uses shadow-mask method because they produce wide range of colors.

4. On a black and white system with one bit per pixel, the frame buffer is commonly called as

- a) Pix map
- b) Multi map
- c) Bitmap
- d) All of the mentioned

Answer: c

Explanation: Bit map frame buffer is always 1 bit per pixel.

5. Aspect ratio means

- a) Number of pixels
- b) Ratio of vertical points to horizontal points

- c) Ratio of horizontal points to vertical points
- d) Both b and c

Answer: d

10. Virtual reality, CAD, and animations are the application of

- a) Z mouse
- b) Digitizers
- c) Data tablets
- d) Image scanners

Answer: a

Explanation: Application of Z mouse includes virtual reality, CAD, and animations.

11. The Cartesian slope-intercept equation for a straight line is

- a) $y = m.x + b$
- b) $y = b.x + m$
- c) $y = x.x + m$
- d) $y = b + m.m$

Answer: a

Explanation: Equation for a straight line is $y = m.x + b$.

12. Expansion of line DDA algorithm is

- a) Digital difference analyzer
- b) Direct differential analyzer
- c) Digital differential analyzer
- d) Data differential analyser

Answer: c

Explanation: DDA stands for digital differential analyzer.

13. Which algorithm is a faster method for calculating pixel positions?

- a) Bresenham's line algorithm
- b) Parallel line algorithm
- c) Mid-point algorithm
- d) DDA line algorithm

Answer: d

Explanation: The DDA is a faster method for calculating pixel positions.

14. If the boundary is specified in a single color, and if the algorithm proceeds pixel by pixel until the boundary color is encountered is called

- a) Scan-line fill algorithm
- b) Boundary-fill algorithm
- c) Flood-fill algorithm
- d) Parallel curve algorithm

Answer: b

Explanation: This algorithm proceeds outward pixel by pixel until the boundary color is encountered.

15. Transpose of a column matrix is _____

- a) Zero matrix
- b) Identity matrix
- c) Row matrix
- d) Diagonal matrix

Answer: c

Explanation: Transpose of a matrix is a matrix which is made by interchanging the rows and columns of the original matrix. Hence the transpose of column matrix is row matrix and vice versa.

16. Which of the following represents shearing?

- a) $(x, y) \rightarrow (x+a, y+b)$
- b) $(x, y) \rightarrow (ax, by)$
- c) $(x, y) \rightarrow (x \cos(\theta)+y \sin(\theta), -x \sin(\theta)+y \cos(\theta))$
- d) $(x, y) \rightarrow (x+ay, y+bx)$

Answer: d

Explanation: The first one represent translation, the second one represents scaling, third one rotation and the last one is representing shearing.

17. Shearing is also termed as _____

- a) Selecting
- b) Sorting
- c) Scaling
- d) Skewing

Answer: d

Explanation: In the case of shear only one coordinate changes its coordinates and other preserves its values, that's why it is also called skewing.

18. The process of elimination of parts of a scene outside a window or a viewport is called _____

- a) cutting
- b) plucking
- c) clipping
- d) editing

Answer: c

Explanation: Clipping is the process of cutting out extra material. In the context of computer graphics, clipping is a method to selectively enable or disable rendering operations within a defined region of interest.

19. For a point to be clipped, which of the following conditions must be satisfied by the point?

- a) $xw_{\min} < x < xw_{\max}$
- b) $xw_{\min} = x = xw_{\max}$
- c) $xw_{\min} > x > xw_{\max}$
- d) $yw_{\min} = y = yw_{\max}$

Answer: c

Explanation: A point $P(x,y)$ is NOT clipped if x is more than the minimum value of x and less than the maximum value of x . Mathematically, it can be written as " $xw_{\min} \leq x \leq xw_{\max}$ ".

20. Which vertex of the polygon is clipped first in polygon clipping?

- a) top right
- b) bottom right
- c) bottom left
- d) top left

Answer: d

Explanation: In polygon clipping, first the polygon is clipped against the left edge of the polygon window to get new vertices of the polygon. So, it is the top left which is clipped first.

21. The process of removal of hidden surfaces is termed as _____

- a) clipping
- b) copying
- c) culling
- d) shorting

Answer: c

Explanation: An area which is related to the visible surface determination (VSD) is called culling. 'Viewing frustum culling' and 'Backface culling' are examples of some culling algorithms.

22. Cohen-Sutherland clipping is an example of _____

- a) polygon clipping
- b) text clipping
- c) line clipping
- d) curve clipping

23. The Cohen-Sutherland algorithm divides the region into _____ number of spaces.

- a) 8
- b) 6
- c) 7
- d) 9

24. If both codes are 0000, (bitwise OR of the codes yields 0000) line lies _____ the window.

- a) completely outside

- b) half inside half outside
- c) completely inside
- d) can't say anything

Answer: c

Explanation: To perform the trivial acceptance and rejection tests, we extend the edges of the window to divide the plane of the window into the nine regions. If both codes are 0000 and 1111, (bitwise OR of the codes yields 0000) line lies completely inside the window and outside the window respectively.

25. Sutherland-Hodgeman clipping is an example of _____ algorithm.

- a) line clipping
- b) polygon clipping
- c) text clipping
- d) curve clipping

Answer: b

Explanation: The Sutherland–Hodgman algorithm is used for clipping polygons. Cohen-Sutherland is line clipping algorithm.

25. When an object is viewed from different directions and at different distances, the appearance of the object will be different. Such view is called _____

- a) oblique projection
- b) perspective view
- c) axonometric projection
- d) isometric projection

Answer: b

Explanation: 3D projection is any method of mapping three-dimensional points to a two-dimensional plane. As most current methods for displaying graphical data are based on planar (pixel information from several bitplanes) two-dimensional media, the use of this type of projection is widespread, especially in computer graphics, engineering and drafting.

26. In graphics, the number of vanishing points depends on

- a) the number of axes cut by the projection plane
- b) the centre of projection
- c) the number of axes which are parallel to the projection plane
- d) the perspective projections of any set of parallel lines that are not parallel to the projection plane

Answer: d

Explanation: A vanishing point is a point on the image plane of a perspective drawing where the two-dimensional perspective projections (or drawings) of mutually parallel lines in three-dimensional space appear to converge.

So, (d) is the correct option.

27. _____ as the most commonly used boundary presentation for a 3-D graphics object

- a) Data polygon
- b) Surface polygon
- c) System polygon
- d) None of these

Answer: b

28. Drawing of number of copies of the same image in rows and columns across the interface window so that they cover the entire window is called _____

- a) Roaming
- b) Panning
- c) Zooming
- d) Tiling