Two marks questions with answers:

Define following:

1. **GKS**
   Ans. Graphics Kernel System

2. **Persistence**
   Ans. It is used to represent time interval during which phosphor emits light after beam is removed.

3. **CRT**
   Ans. It is an Output Device, stands for Cathode Ray Tube.

4. **Pixel**
   Ans. It is the smallest part of the picture, stands for Picture Element.

5. **DDA**
   Ans. It stands for Digital Differential Analyzer used for scan conversion a line.

6. **Foreshortening**
   Ans. Foreshortening is the visual effect or optical illusion that causes an object to appear shorter than it actually is because it is angled toward the viewer.

7. **Cabinet Projection**
   Ans. All lines perpendicular to projection plane are projected to one half of their length. These give realistic appearance of object. This type of projection is known as Cabinet Projection.

8. **Object Space Method**
   Ans. It is implemented in physical coordinate system and used in line display algorithms. In this method, objects and parts of objects are compared to find out the visible surfaces.

9. **Image Space Method**
   Ans. It is implemented in screen coordinate system and used in hidden surface algorithms. In this method, each point is considered for the determination of visible surfaces.

10. **Scaling**
    Ans. In this type of transformation the size of the object is increased or decreased either in uniform manner or non-uniform manner.

11. **Transformation**
    Ans. Transformations are a fundamental part of computer graphics. Transformations are used to position objects, to shape objects, to change viewing positions, and even to change how something is viewed i.e. change the shape.

12. **Viewport**
    Ans. A viewport is a polygon viewing region in computer graphics.

13. **Hidden Line/Surfaces**
    Ans. When we view a picture containing non transparent objects and surfaces, then we can’t see those objects from view which is behind from the objects closer to eye. These unseen surfaces are known as hidden surfaces.

14. **Write Matrix of 2D Rotation**
    Ans. Matrix for Anticlockwise rotation
    \[
    \begin{bmatrix}
    \cos \theta & \sin \theta \\
    -\sin \theta & \cos \theta \\
    \end{bmatrix}
    \]
    Matrix for Clockwise rotation
    \[
    \begin{bmatrix}
    \cos \theta & -\sin \theta \\
    \sin \theta & \cos \theta \\
    \end{bmatrix}
    \]
    Matrix for homogeneous Co-ordinate rotation clockwise rotation
    \[
    \begin{bmatrix}
    \cos \theta & -\sin \theta & 0 \\
    \sin \theta & \cos \theta & 0 \\
    0 & 0 & 1 \\
    \end{bmatrix}
    \]
    Matrix for homogeneous Co-ordinate rotation anticlockwise rotation
   Ans. It may not fill regions sometimes correctly when some interior pixel is already filled with color.

16. Scan Conversion
   Ans. The process of representing continuous graphics objects as a collection of discrete pixels is called Scan Conversion.

17. Computer Graphics
   Ans. It is use of computers to create and manipulate picture on display device. It comprises of software techniques to create, store, modify, and represent pictures.

18. LCD
   Ans. It is an Output Device, stands for Liquid Crystal Display.

19. Digitizer
   Ans. It is an input device which is used to read x, y coordinates from drawings or blue prints. It consists of table or board similar to drawing board and a pen moved over the surface. The pen contain switch which enables user to register x and y co-ordinates at desired position. The result of input data is graphically displayed on CRT.

20. Raster Scan Display
   Ans. In this, the viewing screen is divided into a large number of discrete picture elements called pixels. The matrix of pixels constitutes the raster. During operation the electron gun creates the image by sweeping along a horizontal line on the screen from left to right & energizing the pixels in that line during the sweep.

21. Frame
   Ans. In graphics applications, a rectangular area in which text or graphics can appear.

22. Viewport
   Ans. A viewport defines in normalized coordinates a rectangular area on the display device where the image of the data appears. A viewport is defined with the GPORT command. We can have our graph take up the entire display device or show it in only a portion, say the upper-right part. A window and a viewport are related by the linear transformation that maps the window onto the viewport.

23. Window
   Ans. A window defines a rectangular area in world coordinates. The window can be defined to be larger than the same size as or smaller than the actual range of data values, depending on whether we want to show all of the data or only part of the data.

24. Shearing
   Ans. It is a transformation which changes the shape of object.

25. Vanishing Point
   Ans. It is a point where all lines appear to meet. There can be 1, 2 and 3 point perspective of vanishing point.

26. PHIGS
   Ans. It is Programmers Hierarchical Interactive Graphics Standard.

27. Electron Gun
   Ans. It is used in CRT Display devices to spray electrons onto the screen of phosphorous.

28. Rotation
   Ans. It is a type of geometric transformation in which an object is rotated about an angle either clockwise or anticlockwise.

29. Convex Polygon
   Ans. A polygon is called as Convex when lines joining any two interior points of polygon lie inside polygon. ---- A non convex polygon is known as CONCAVE polygon. It has one interior angle greater than 180 degrees. So that it can be clipped into similar polygons.

30. Clipping
   Ans. For deciding visible and invisible portion a special process called as Clipping is used. It decides each element into visible and invisible portion. Visible portion is selected and invisible is discarded.
31. Mouse
   Ans. It is a type of pointing device under the category of input device used to point or select graphics objects/icons.

32. CAM stands for what
   Ans. Computer Aided Machines

33. WCS stands for what
   Ans. World Coordinates System or "universe" or "model" coordinate system. This is the base reference system for the overall model, (generally in 3D), to which all other model coordinates relate.

34. Plotter is an Input Device or Output Device
   Ans. It is an Output Device.

35. Aspect Ratio
   Ans: It is the ratio of vertical points to horizontal points necessary to produce equal length lines in both directions of computer screen.

36. Seed Point
   Ans. It is a point or seed, which is inside region is selected.

37. Resolution
   Ans. The density of Dots or Pixels on screen is known as resolution. It is expressed using row and column.

38. Parallel Projection
   Ans. In parallel projection, coordinate positions are transformed to the view plane along parallel lines.

39. DVST
   Ans: It is Direct View Storage Tube in which one extra Flood Gun is used to maintain picture display.

40. Reflection
   Ans: It is transformations which produce mirror image of an object. The mirror image can be either about x axis and y axis.

41. Center of Projection
   Ans: In Perspective Projection all lines appears to meet at a single center point. This central point is called as Center of Projection.

42. MICR
   Ans: Magnetic Ink Character Recognition (MICR) is a technique that enables special characters printed in magnetic ink to be read and input rapidly to a computer. E.g. used in banking on Checks etc.

43. Region Filling
   Ans: It is a process of filling image or region. It can be defined in terms of pixels. Filling can be of boundary or interior region.

44. CAD stands for what
   Ans: Computer Aided Design used for designing Buildings, aircrafts and automobiles.

45. NDC stands for what
   Ans: Normalized Device Coordinates, which specifies a device independent tool to describe the Display area. It is used, as different monitors have different size specifications.

46. LIGHT PEN is input device or output device
   Ans: Input Device

47. Use of Frame Buffer
   Ans: A framebuffer (frame buffer, or framestore) is a portion of RAM containing a bitmap that is displayed to a video display from a memory buffer containing a complete frame of data or picture.

48. Vector Graphics
   Ans: Also know as Raster Scan Graphics

49. What is the use of Scanner?
   Ans: A scanner is a device that captures images from photographic prints, posters, magazine pages, and similar sources for computer editing and display.

50. Translation
   Ans: It is defined as the straight line movement of object from one co-ordinate position to another co-ordinate position.

51. Touch Panel or Touch Screen
   Ans: In this objects can be selected using a finger of touch on the screen.
Four marks questions:

2. Draw label diagram of CRT?
4. What is Graphics Software?
5. Write algorithm for line using DDA method.
6. Define Flood Fill Algorithm.
7. Explain 2D scaling about a Pivot point.
8. What is a composite transformation?
9. Explain line clipping
10. Differentiate between Image Space Method and Object Space Method.
12. What is Vanishing point? Explain its types.
13. Explain DVST.
14. What is random scan display?
15. What is Parallel projection?
16. Discuss shadow mask method.
17. Explain reflection.
18. Define scan conversion of line.
19. Explain homogenous scaling.
20. Explain the steps re
22. Explain any two input devices
23. What are the advantages of DVST over CRT?
24. What are the characteristics of Plasma Panel?
25. Explain display processor.
27. Give matrix for translation and explain.
28. Explain how rotation about an arbitrary point obtained.
29. Explain polygon clipping.
30. Explain 3 D transformations
31. Discuss beam penetration method.
32. Discuss rotation about a pivot point.
33. Write steps of DDA algorithm.
34. Explain scaling about a fixed point.
35. Explain any two output devices.
36. Explain various perspective anomalies.
37. Explain vector method to display image screen?
38. What are side effects of scan conversion?
39. How flood fill algorithm works.
40. Give matrix for scaling in 2D transformation and explain.
41. How Cohen Sutherland algorithm works?
42. Explain homogenous transformation for 3D?
43. Explain concept of Hidden Line elimination?
44. Explain isometric projection.
45. Explain concept of Vanishing Point.
46. Differentiate between Parallel and Perspective Projection.
47. Explain Scaling with respect to a Point.
48. Explain DVST in detail.
49. What are various functions of a display processor?
50. Define 3D transformations.
Ten marks questions:

1. Explain Cohen-Sutherland clipping algorithm for line.
2. Differentiate between:
   a. Raster scan and random scan display
   b. LED and LCD
3. Explain the following:
   a. Scan-Line algorithm
   b. Z-Buffer algorithm
5. Explain any two output devices.
6. Explain various types of clipping in brief.
7. Explain Bresenham’s Circle drawing algorithm in detail.
8. Explain Wire Frame model.
9. What is Digitizer? Write down its usage.
10. Explain various applications of computer graphics.
11. What are various differences between Random Scan and Raster Scan Display? Explain Raster Display Processor.
12. Explain Bresenham’s Line drawing algorithm in detail.
13. Explain various region filling algorithms.
14. Explain various geometric transformations in detail with example.
15. Explain DDA algorithm for Line Drawing.
16. Explain various components of CRT with diagram.
17. Write Short notes on:
   a. Viewing
   b. Flood Filling
   c. Scan Converting a Point

*****all the best*****