Government Engineering College Jhalawar

Department of Information Technology

Subject: Computer Graphics and Multimedia Techniques Model Question Paper

VI Sem (Computer Engineering)

Que-1   Explan Antialiasing in brief?

Que-2 Explain Bresenham line algorithm?

 Que-3 Describe Cohen Sutherland line clipping algorithm ?

Que-4 Explain Depth buffer method ?

Que-5 Explain phong shading in brief ?

Ans 1 :- In digital signal processing, anti-aliasing is the technique of minimizing aliasing when representing a high-resolution signal at a lower resolution.

In most cases, anti-aliasing means removing data at too high a frequency to represent. When sampling is performed without removing this part of the signal, it causes undesirable artifacts such as the black-and-white noise .

In signal acquisition, this is often done using an analog anti-aliasing filter to remove the out-of-band component of the input signal prior to sampling with an analog-to-digital converter.

Ans 2:- Bresenham's line algorithm is an algorithm that determines the points of an n-dimensional raster that should be selected in order to form a close approximation to a straight line between two points. It is commonly used to draw line primitives in a bitmap image (e.g. on a computer screen), as it uses only integer addition, subtraction and bit shifting, all of which are very cheap operations in standard computer architectures. It is an incremental algorithm .

2)It is much accurate and much more efficient than DDA.

3)It scans the coordinates but instead of rounding them off it takes the incremental value in account by adding or subtracting and therefore can be used for drawing circle and curves.

4) Therefore if a line is to be drawn between two points x and y then next coordinates will be(xa+1,ya) and (xa+1,ya+1)

Ans 3 :-The Cohen-Sutherland line clipping algorithm quickly detects and dispenses with two common and trivial cases. To clip a line, we need to consider only its endpoints.
1. If both endpoints of a line lie inside the window, the entire line lies inside the window. It is trivially accepted and needs no clipping.

2. On the other hand, if both endpoints of a line lie entirely to one side of the window, the line must lie entirely outside of the window. It is trivially rejected and needs to be neither clipped nor displayed.

Ans 4:-In computer graphics, z-buffering, also known as depth buffering, is the management of image depth coordinates in 3D graphics, usually done in hardware, sometimes in software. It is one solution to the visibility problem, which is the problem of deciding which elements of a rendered scene are visible, and which are hidden.

The Z-buffer is a technology used in almost all contemporary computers, laptops and mobile phones for performing 3D graphics, for example for computer games. The Z-buffer is implemented as hardware in the silicon ICs (integrated circuits) within these computers. The Z-buffer is also used (implemented as software as opposed to hardware) for producing computer-generated special effects for films.

Ans 5:- Phong shading refers to an interpolation technique for surface shading in 3D computer graphics. It is also called Phong interpolation or normal-vector interpolation shading. Specifically, it interpolates surface normals across rasterized polygons and computes pixel colors based on the interpolated normals and a reflection model. Phong shading may also refer to the specific combination of Phong interpolation and the Phong reflection model.

Phong reflection is a local illumination model devised by Bui Tuong Phong and can produce a certain degree of realism in three-dimensional objects by combining three elements - diffuse, specular and ambient lighting for each considered point on a surface. It has several assumptions - all lights are points, only surface geometry is considered, only local modelling of diffuse and specular exists, specular colour is the same as light colour, and ambient is a global constant.