CGIP ASSIGNMENT – 1

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CSE SECTION-B

1. What is scan conversion?

Scan conversion is the process of converting graphical objects defined in terms of geometric shapes into a pixel-based representation for display on a screen. It involves determining which pixels to turn on or off to accurately represent the shapes and details of the objects.

2. Write the properties of video display devices?

Resolution

Refresh rate

Color depth

Aspect ratio

Brightness

Contrast ratio

Viewing angle

Response time

Connectivity options

3. What is rasterization?

Rasterization is the conversion of vector-based graphical primitives, such as lines and polygons, into pixel-based formats for visualization. This transformation entails identifying which pixels correspond to the shapes and assigning appropriate colors to generate an accurate representation.

4. Define Computer graphics.

Computer graphics encompasses the creation, manipulation, and portrayal of visual images and animations utilizing computer systems. The domain employs

diverse techniques and algorithms to produce and present graphical content on monitors and other output devices.

5. Name any four input devices

Keyboard

Mouse

Graphics Tablet

Touchscreen

6. Write the two techniques for producing color displays with a CRT?

Shadow Mask Approach

Aperture Grille Technique

7. What is vertical retrace of the electron beam?

The vertical retrace signifies the phase where the electron beam of a CRT monitor returns to the top of the screen after reaching the bottom. This interval remains hidden and allows the beam to reset for the upcoming frame.

8. Short notes on video controller?

A video controller is a hardware component responsible for generating video signals that facilitate image display on monitors. Its responsibilities encompass screen refreshment, color and resolution management, and interaction with the computer's primary memory.

9. What is bitmap?

A bitmap signifies a two-dimensional arrangement of pixels. Each pixel retains information about color and other attributes. Bitmaps are commonly employed for image representation within the realm of computer graphics.

10. Differentiate plasma panel display and thin film electroluminescent display?

Plasma Panel Display: Leverages gas-filled cells to emit ultraviolet light, subsequently interacting with phosphors to generate visible light. Offers precise color and broad viewing angles. Consumes notable power and has relatively high weight.

Thin Film Electroluminescent Display: Utilizes thin material layers that emit light when subjected to an electric field. Delivers vivid colors. However, its size and resolution are limited.

11.What is resolution?

Resolution refers to the quantity of distinct pixels capable of presentation on a screen. It is typically indicated as width by height and influences image sharpness and detail.

12.What is horizontal retrace of the electron beam?

Horizontal retrace is the period during which the electron beam of a CRT display moves back to the left side of the screen after reaching the right side. Similar to vertical retrace, it's a non-visible period that allows the beam to reset.

13.What is filament?

The filament is a wire in a CRT that heats up to emit electrons. These electrons are accelerated and focused to create the electron beam used for displaying images on the screen.

14.What is pixmap?

A pixmap denotes a two-dimensional array containing color values, serving as an image representation in computer graphics. Each array element corresponds to a pixel and holds color-related data.

15.Write the types of clipping?

Line Clipping

Polygon Clipping

16.What is meant by scan code?

A scan code serves as a unique identifier assigned to individual keys on a keyboard. It standardizes the representation of key presses and releases.

17.List out the merits and demerits of Penetration techniques?

Merits: Realistic rendering, natural lighting effects.

Demerits: Complex algorithms, computational intensity.

18.List out the merits and demerits of DVST?

Merits: Flicker-free, long persistence.

Demerits: Limited resolution, expensive.

19.What do you mean by emissive and non-emissive displays?

Emissive Displays: Emit their light (e.g., CRT, OLED).

Non-Emissive Displays: Require external light sources (e.g., LCD, e-paper).

20.List out the merits and demerits of Plasma panel display?

Merits: Presents broad viewing angles and superior color reproduction.

Demerits: Consumes substantial power and is prone to burn-in.

21.What is persistence?

Persistence denotes the time taken for a pixel to transition from full illumination to complete darkness after voltage withdrawal. This characteristic significantly impacts the fluidity of motion in dynamic images.

22.What is Aspect ratio?

Aspect ratio pertains to the ratio of width to height in a display or image. Common ratios include 16:9 (widescreen) and 4:3 (standard).

23.What is the difference between impact and non-impact printers?

Impact Printers: Physically strike inked ribbons against paper (e.g., dot matrix printers).

Non-Impact Printers: Deploy methods like ink spraying or lasers (e.g., inkjet printers, laser printers).

24.Define pixel?

A pixel signifies the smallest indivisible unit within an image on a screen. It represents a single point in a rasterized image and carries information regarding color and luminance.

25.What is frame buffer?

A frame buffer is a portion of a computer's memory used to store the pixel data for display. It holds the information needed to render an image on the screen.

26.Where the video controller is used?

The video controller is used in computer systems to manage the generation of video signals, control the display output, and ensure proper interaction between the computer and the display device.

27.What is run length encoding?

Run-length encoding is a data compression technique that represents consecutive repeated characters or values in a sequence as a single character or value followed by a count of repetitions. It's often used to compress simple images with long runs of the same color.