UNIT – 3

Part – B & C Question Bank

1. Discuss the viewing transformation process in computer graphics. Explain its significance in converting 3D coordinates to 2D screen coordinates and detail the various steps involved in this transformation.
2. Compare and contrast perspective projection and orthographic projection. Describe their mathematical formulations, applications, and how each affects the perception of depth in a scene.
3. Explain the concept of the camera in computer graphics. Discuss different types of cameras, their parameters (such as position, orientation, field of view), and how they influence scene rendering.
4. Define visual realism in computer graphics. Discuss the factors that contribute to visual realism, including lighting, shading, texture, and motion, and explain how they interact to create lifelike images.
5. Analyze the role of lighting models in rendering realistic images. Compare different lighting models (e.g., Phong, Blinn-Phong, Lambertian) and discuss how they contribute to the perception of materials and surfaces.

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6. Describe the techniques used to achieve anti-aliasing in computer graphics. Discuss the various methods (e.g., supersampling, multisampling) and their effectiveness in improving image quality.
7. Explain the concept of global illumination. Discuss its importance in rendering realistic images, the algorithms used (e.g., radiosity, ray tracing), and their computational implications.
8. What is texture mapping, and how does it enhance visual realism? Discuss the different types of texture mapping (e.g., UV mapping, bump mapping, normal mapping) and their applications in creating detailed surfaces.
9. Discuss the concept of ambient occlusion and its impact on visual realism. Explain how ambient occlusion simulates soft shadows and depth in a scene and the techniques used to implement it.
10. What is a depth buffer, and how is it used in rendering? Discuss the significance of depth buffering in handling visibility and occlusion in 3D scenes.

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11. Analyze the difference between diffuse and specular reflection. Discuss the physical principles behind each type of reflection and their effects on material appearance in rendered images.

12. Explain the use of shaders in achieving visual realism. Discuss the different types of shaders (vertex, fragment, geometry) and how they contribute to the rendering pipeline.

13. Describe the importance of the viewing frustum in computer graphics. Discuss its role in determining which objects are visible and how it influences rendering performance and efficiency.

14. How does motion blur contribute to visual realism in animations? Explain the principles behind motion blur and the techniques used to simulate it in computer graphics.

15. Discuss the psychological effects of color in visual design. Explain how color theory principles impact viewer perception and emotional responses in graphics and animations.