**Unit 1: Computer Graphics**

1. Define computer graphics and explain its significance in modern applications.
2. Differentiate between raster scan and random scan systems.
3. What is a frame buffer? Discuss its role in a video controller.
4. Describe the key components and functioning of graphics hardware, particularly GPUs.
5. List and explain recent trends in computer graphics technology.

**Unit 2: Scan Conversion Algorithms**

1. Explain the concept of scan conversion and its importance in computer graphics.
2. Discuss the Digital Differential Analyzer (DDA) algorithm for line drawing. Provide a step-by-step example.
3. Describe Bresenham's Line Algorithm and compare it with the DDA algorithm.
4. How is the circle generation algorithm implemented in graphics? Discuss its working principle.

**Unit 3: Two-Dimensional Geometric and Viewing Transformations**

1. What are two-dimensional transformations? Explain the concepts of translation, rotation, and scaling with examples.
2. Illustrate how matrix representations are used in transformations.
3. Define composite transformations and explain their significance in complex graphical operations.
4. Discuss the two-dimensional viewing pipeline and its stages.
5. What is window-to-viewport transformation? Why is it important in computer graphics?
6. Explain the Cohen-Sutherland line clipping algorithm with an example.

**Unit 4: Three-Dimensional Graphics**

1. Discuss the various types of three-dimensional transformations, including translation, rotation, and scaling.
2. What are polygon surfaces? Explain how solid modeling is used in 3D representations.
3. Differentiate between parallel and perspective projections in 3D graphics.

**Unit 5: Visual Realism and OpenGL**

1. Explain the concept of hidden surface removal. Compare the back-face detection, depth buffer method, and scan line method.
2. What is illumination theory? Discuss the models of ambient light, diffuse reflection, and specular reflection.
3. Compare different shading methods, including constant shading, Gouraud shading, and Phong shading.
4. Describe the architecture of OpenGL. How are basic output primitives and polygons drawn using OpenGL?
5. Explain the concept of callback functions in OpenGL and their role in handling input and performing transformations.

**Unit 6: Multimedia System and Media Representation**

1. Define a multimedia system and explain its properties.
2. Differentiate between continuous and discrete media with examples.
3. *Discuss the evolution and trends in multimedia technology.*
4. Explain the common image formats like BMP, JPEG, and PNG. What are their advantages and disadvantages?
5. How are digital audio formats like WAV and MP3 different? Discuss audio sampling and quantization.
6. What are MIDI hardware, software, and messages? Explain their significance in multimedia systems.
7. Discuss the importance of video codecs and their role in determining frame rate, resolution, and color depth.
8. Explain the basic steps in creating animations, focusing on hand-drawn, stop-motion, and computer animations.

**Unit 7: Multimedia Compression Techniques**

1. Explain the JPEG image compression standard. How does it differ from other image compression techniques?
2. Discuss psychoacoustic principles and how they relate to perceptual audio coding.
3. Compare lossy audio compression algorithms like MP3 and AAC. What are their primary use cases?
4. Analyze video compression standards such as MPEG, MPEG-2, MPEG-4, and H.264/AVC. How do these standards impact video quality and file size?

**Unit 8: Multimedia Application Development**

1. What are multimedia authoring tools? Discuss their role in creating interactive multimedia applications.
2. Explain the principles of user interface design for multimedia applications. Why is it critical in multimedia development?
3. Discuss the concept of a multimedia workstation. What are its key components?
4. What are the real-time requirements in multimedia systems? Explain with examples.

**Answers**

1. ***Discuss the evolution and trends in multimedia technology.***

Multimedia technology has evolved significantly over the decades:

1. **Early Multimedia (1960s-1980s)**: Started with text and simple images, limited by storage and processing power.
2. **Interactive Multimedia (1990s)**: Introduction of multimedia PCs and CD-ROMs, leading to rich interactive experiences. The web began integrating basic multimedia.
3. **Digital Revolution (2000s)**: Compression technologies (MP3, MPEG) enabled digital audio/video. Broadband Internet allowed for streaming services like YouTube and Netflix.
4. **Mobile and Social Media (2010s)**: Smartphones made multimedia mobile, while social platforms like Instagram and TikTok focused on user-generated content.
5. **Current Trends (2020s)**:
   * **VR/AR**: Immersive experiences in gaming, education, and retail.
   * **AI**: Enhances content creation, personalization, and interactivity.
   * **4K/8K**: Push for higher resolution content.
   * **Cloud-Based Media**: Real-time collaboration and seamless access.
   * **Interactive Media**: Growth in interactive storytelling and immersive experiences.
6. **Future Directions**:
   * **Metaverse**: A unified virtual space blending VR, AR, and the Internet.
   * **5G and Edge Computing**: Faster streaming, real-time interactivity.
   * **Sustainability**: Focus on energy-efficient technologies in multimedia.