**Computer Graphics and Animation**

UNIT-1: INTRODUCTION

1. **Advantage of computer graphics and areas of application**
2. **Hardware and software for computer graphics.**
   1. **Hard copy**
   2. **Display technologies**
3. **Random scan display system**
4. **Video Controller**
5. **Random scan display processor**
6. **Raster graphics**
7. **Scan conversion algorithms**
   1. **Line**
   2. **Circle**
   3. **Ellipse**
8. **Area filling**
   1. **Rectangle**
   2. **Ellipse**
9. **Clipping**
   1. **Lines**
   2. **Circle**
   3. **Ellipse**
10. **Clipping polygons**

UNIT-2: TWO DIMENSIONAL AND THREE DIMENSIONAL TRANSFORMATIONS

1. **2-D Dimensional Transformation**
2. **2-D Translation**
3. **Rotation**
4. **Scaling**
5. **Homogeneous Coordinates**
6. **Reflection**
7. **Shear Transform**
8. **3-Dimentional Transformation**
9. **3-D Translation**
10. **Rotation Scaling**
11. **Reflection**
12. **Shear**

UNIT-3: CLIPPING

1. **Window to view port transformation**
2. **Clipping**
3. **Line clipping**
4. **Cohen – Sutherland line clipping**
5. **Polygon clipping**
6. **Sutherland and Gary Hodgman polygon clipping algorithm**

UNIT-4: VISIBLE SURFACE DETERMINATION AND COMPUTER GRAPHICS ALGORITHM

1. **Image space and object space techniques**
2. **Hidden Surface removal – Depth comparison**
3. **Z-Buffer Algorithm**
4. **Back-Face Removal**
5. **The Painter’s Algorithm**
6. **Scan-Line Algorithm**
7. **Light and Color and different color models**
   1. **RGB**
   2. **CMY**
   3. **YIQ**

UNIT-5: ANIMATION AND VIRTUAL REALITY

1. **Basic principles of animation and types of animation**
2. **Introduction to the flash interface**
3. **Setting stage dimensions**
4. **Working with panels**
5. **Panel layouts**
6. **Layers and views**
7. **Shaping objects**
   1. **Overview of shapes**
   2. **Drawing and modifying shapes**
8. **Bitmap images and sounds**
9. **Animation**
   1. **Principles**
   2. **Frame by frame animation**
   3. **Tweening**
   4. **Masks**
10. **Introduction to virtual reality**