|  |  |  |
| --- | --- | --- |
| **Paper Code:** HCSCR6142P | **Computer Graphics**  **(Theory)** | **Marks: 60** |
| **Sl. No.** | **Topic** | **No. of Periods** |
| **Group - A (26 periods)** | | |
| 1 | **Introduction -** Basic elements of Computer graphics, Applications of Computer Graphics. | 2 |
| 2 | **Graphics Hardware -** Architecture of Raster and Random scan display devices, input and output devices. | 5 |
| 3 | **Two Dimensional Transformations -** Homogeneous coordinate system, Translation, Rotation, reflection along x-axis, reflection along y-axis, reflection along y=x axis, reflection along y=-x, scaling along x-axis, scaling along y-axis, composite transformations, reflection along a general axis. | 5 |
| 4 | **Three Dimensional Transformations -** Translation along x, y, z axes, Rotation along x-axis, y-axis and z-axis , reflection along xy-plane, reflection along yz-plane, reflection along zx-plane, scaling along x-axis, scaling along y-axis, scaling along z-axis, composite transformations, rotation along a general line. | 5 |
| 5 | **Fundamental Techniques in Graphics -** Line drawing algorithms, Circle drawing algorithm, Ellipse drawing algorithm, line and polygon clipping algorithms. | 9 |
| **Group - A (26 periods)** | | |
| 5 | **Advanced Techniques in Graphics -** Polygon filling, Seed Fill algorithm, 2D and 3D Viewing Transformations (Projections- Parallel and Perspective), and Vanishing points. | 4 |
| 6 | **Geometric Modeling -** Parametric Functions, Bezier methods, Bezier curves, Bezier surfaces. B-Spline curve. | 7 |
| 7 | **Visible Surface determination -** Hidden surface elimination, Back-face detection, Depth-buffer method (Z-Buffer method), Depth-Sort method, Binary face partition method. | 7 |
| 8 | **Surface rendering -** Illumination and shading models. Basic color models and Computer Animation. Morphing. | 8 |
| **Total** | | **52** |
| **Books and References:**   1. J.D.Foley, A.Van Dan, Feiner, Hughes Computer Graphics Principles & Practice 2nd   edition Publication Addison Wesley 1990   1. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008 2. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997. | | |

|  |  |  |
| --- | --- | --- |
| **Paper Code: C62P** | **Computer Graphics**  **(Practical))** | **Marks: 40** |