Content Product
Detailed syllabus
ENGINEERING GRAPHICS

UNIT - CONCEPT AND CONVENTIONS (Not for examination)

Introduction to Engineering drawing - Introduction to Engineering drawing. **Drawing instruments** - Drawing instruments. **Lettering** - Introduction, Styles of lettering, Double stroke vertical lettering. **Lines** - Lines, Types of lines, Types of lines and its application, Line weights, Drawing sheet, Folding of drawing sheet, Material conventions. **Dimensioning practice** - Dimensioning, Elements of dimensioning, Surface finish, Indication of surface texture, Placing of dimensioning, Arrangements of dimensions, Rules for dimensioning standard features, Examples.

UNIT I–PLANE CURVES AND FREE HAND SKETCHING

Geometric construction - To bisect a line, To bisect an arc, To divide a line into eight equal number of parts, To Bisect an angle, To Trisect an angle, Construction of tangent lines, Construction of tangent lines, To construct a square, To construct an equilateral triangle, To construct a regular hexagon, To construct any regular polygon, Examples. **Conics** - Conics, Construction of ellipse by eccentricity method (Directrix and Focus method), Construction of ellipse by arcs of circle method, Construction of ellipse by concentric circle method. **Parabola** - Construction of parabola by eccentricity method, Construction of parabola by rectangular method. **Hyperbola -** Construction of hyperbola by eccentricity method, Construction of rectangular hyperbola. **Cycloid** - Cycloid, Epicycloids, Hypocycloids. **Involutes** - Involute, Construction of involute of square. **Scales** - Introduction, Nature of scales, Representation of scale, Scales on drawings, Plain scales, Diagonal scales, Vernier scales, Examples. **Free hand sketching** - Free hand sketching, Problems.

UNIT II-PROJECTION OF POINTS, LINES AND PLANE SURFACES

Projection - Projection, Orthographic projection, Planes of projection, Four quadrant, Six faces on the box, First angle projection, Third angle projection, Symbols for methods of projection, II and IV angle projections, Projection of points, Examples. **Projection of straight lines** - Projection of straight lines, Different positions of a straight line with respect to V.P and H.P, Line inclined to both the reference planes, Common data for all problems, True length and true inclinations of a line, Rotating line method, Rotating trapezoidal method, Trace of a line, Examples. **Projection of plane surface** - Projection of planes, Different positions of the plane with respect to HP and VP, Traces of plane, Examples.

UNIT III–PROJECTION OF SOLIDS

Projection of solids - Introduction, Polyhedra, Other polyhedra, Solids of revolution, Cylinder, Cone, Sphere, Frustums, Truncated solids, Right regular solids and oblique solids. **Positions of the solid** - Solid with axis perpendicular to HP, Examples. **Solid with axis perpendicular to VP** - Solid with axis perpendicular to VP, Example. **Solid with axis parallel to both HP and VP** - Solid with axis parallel to both HP and VP, Example. **Solid with axis parallel to VP and inclined to HP** - Solid with axis parallel to VP and inclined to HP, Examples. **Solid with axis parallel to HP and inclined to VP** - Solid with axis

parallel to HP and inclined to VP, Examples.

UNIT IV–PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES

Section of solids - Introduction, Types of cutting planes. **Section of solids** - Examples. **Development of surfaces** - Development of surfaces, Stretch-out-line method, Radial line method. **Development of surfaces problems** - Examples.

UNIT V–ISOMETRIC AND PERSPECTIVE PROJECTIONS

Isometric projection - Isometric projection, Isometric projection/view of planes, Isometric projection of a circle, Examples. **Isometric projection problems** - Examples. **Perspective projection** - Perspective projection, Perspective projection terminologies, Visual rays method. **Perspective projection problems** - Examples.

UNIT COMPUTER AIDED DRAFTING (Demonstration only)

CAD system- Introduction, CAD system, Hardware components, Output devices, Software, Types of CAD system, Input devices, Output device, Types of output device (Hard drives), Plotters, Hardcopy unit, Electrostatic plotter. **Introduction to CAD** - Introduction, AutoCAD, Features of AutoCAD, Importance of AutoCAD. **AutoCAD commands** - Starting AutoCAD, Invoking AutoCAD commands, Planning for a drawing, Reference planes of HP, VP, RPP and LPP of 2D/3D environment, Planning for a drawing, Drawing entity point, Drawing entity point. **Line** - Drawing entity rectangle, Drawing entity polygon, Drawing entity ellipse. **Modifying commands** - Modifying commands, Text commands, Dimensioning commands, Cross hatching and pattern filling.