**R-20 ENGINEERING DRAWING**

(Common to ECE, EEE)

**COURSE OBJECTIVE**

Engineering drawing is the principle method of communication for engineers - the objective is to introduce the students, the techniques of constructing the various types of polygons, curves. The objective is also to visualize and represent the 3D objects in 2D planes with proper dimensioning, scaling etc.

**COURSE OUTCOMES: Students are able to**

CO1: Construct polygons, conics, cycloids, involutes. (K2)

CO2: Draw the orthographic projections of points, lines in different positions. (K2)

CO3: Draw the orthographic projections of plane surfaces in different positions. (K2)

CO4: Draw the orthographic projections of solids like prisms, cylinder, pyramids and cone. (K2)

CO5: Convert Isometric views to orthographic views and vice-versa and also visualize 2D & 3D objects using Auto CAD. (K2)

**UNIT I**

**Polygons**: Constructing regular polygons by General method.

**Curves:** Construction of Parabola, Ellipse and Hyperbola by Eccentricity method, Construction of Cycloid, Epi-cycloid and Hypo-cycloid and Involutes of square, Triangle, Pentagon and Hexagon.

**UNIT II**

**Orthographic Projections**: Reference plane, importance of reference lines, projections of points in various quadrants, projections of lines (First angle projection only), line parallel to both the planes, line parallel to one plane and inclined to other plane. Projections of straight lines inclined to both the planes.

**UNIT III**

**Projections of Planes**: Regular planes perpendicular and parallel to one reference plane and inclined to the other reference plane; inclined to both the reference planes (HP & VP).

**UNIT IV**

**Projections of Solids**: Prisms, Pyramids, Cone and Cylinder, Simple positions of solids and axis of the solid parallel to one plane and inclined to other plane.

**UNIT V**

**Isometric Views:** Conversion of Isometric views to Orthographic views; Conversion of Orthographic views to Isometric views.

**CAD:** Fundamentals of AutoCAD - For Polygons, Creating 2D And 3D Drawings.

**Using Auto CAD:** Computer Aided Design, Drawing practice using Auto CAD simple figures like polygons, creating 2D&3D drawings of objects using Auto CAD.

**Note**: In the End Examination there will be no question from CAD.

**TEXT BOOKS**:

 1. Engineering Drawing by N.D. Butt, Chariot Publications 2016

 2. Engineering Drawing + AutoCAD by K. Venugopal, V. Prabhu Raja, New Age 2010

**REFERENCE BOOKS**:

1. Engineering Drawing by K.L.Narayana & P. Kannaiah, Scitech Publishers 2016

2. Engineering Graphics for Degree by K.C. John, PHI Publishers 2009

3. Engineering Graphics by PI Varghese, McGrawHill Publishers 2013