

# ENGINEERING DRAWING

Periods / week- 06

Total periods- 90

Examination – 4 hours

End Exam- 100 marks

Sessional- 50 marks

## Topic wise distribution of periods

Sl. No.	Topics	Periods
1.	Introduction and Demonstration	03
2.	Types of lines, Lettering & Dimensioning	03
3.	Scales	03
4.	Curves	06
5.	Orthographic Projection	21
6.	Section and Development	21
7.	Isometric Projection	06
8.	Building Drawing	12
9	Practice on AutoCAD	15
	<b>Total</b>	<b>90</b>

(All drawings are to be made in First Angle Projection)

## OBJECTIVE

After completion of the study of Engg. Drawing the student should

1. Understand the importance of Engg . Drawing.
2. Demonstrate the use of different drawing instrument.
3. Make free hand lettering and numbering.
4. Practice of dimensioning of drawings.
5. Undertake different geometric constructions, projections of straight lines, planes and solids.
6. Take up different orthographic projections.
7. Draw sectional views, development of surface of different solids.
8. Develop the concept of building drawing.
9. Prepare 2D engineering drawing using AutoCAD software





## **Course Contents**

### **1.0 INTRODUCTION & DEMONSTRATION**

- 1.1 Identify various sizes of drawing boards, drawing sheets as per BIS.
- 1.2 List the types of pencils, instruments, and scales (RF).
- 1.3 Demonstrate laying of drawing sheet, margin, standard layout and title block.

### **2.0 2.1 TYPES OF LINES, LETTERING & DIMENSIONING**

- 2.2 Demonstrate and explain the use of various types of lines.
- 2.3 State and explain various types of lines.
- 2.4 Demonstrate the principle of single stroke gothic lettering & numerals as per BIS.
- 2.5 State and demonstrate various types of title blocks.

### **3.0 SCALES**

Define and draw plain scale and diagonal scale.

### **4.0 CURVES**

- 4.1 Explain Conic sections with illustration. Explain terms like focus, vertex, directrix and eccentricity
- 4.2 Draw conics sections by eccentricity method (Ellipse and Parabola only)
- 4.3 Draw Ellipse by major axis method, concentric circle method and intersection of Arc of circle method.
- 4.4 Draw parabola by base and axis method, double ordinate method.

### **5.0 ORTHOGRAPHIC PROJECTIONS**

- 5.1 Demonstrate the principles of 1<sup>st</sup> angle, 2<sup>nd</sup> angle, 3<sup>rd</sup> angle and 4<sup>th</sup> angle projections with the help of models.
- 5.2 Explain principles of projections.
- 5.3 Draw projections of point.
- 5.4 Draw projection of straight line (parallel to both planes, parallel to one and perpendicular to other, parallel to one and inclined to other and inclined to both the planes).

Draw plane figure such as squares, rectangles, triangles, circle Pentagon and hexagon (perpendicular to one plane and inclined to other).

- 5.5 Draw projections of solids such as prism, cylinder, cone, tetrahedron and pyramid with axis parallel to one plane and perpendicular to other).

### **6.0 SECTION & DEVELOPMENTS**



- 6.1 Draw the section & development of prism, cylinder, cone, pyramid with axis parallel to one reference plane & perpendicular to other reference plane. Cutting plane perpendicular to one reference plane and inclined to other reference plane.
- 6.2 Draw true shape of the cutting sections.

## 7.0 ISOMETRIC PROJECTIONS

Draw isometric view & Isometric projection of prism, pyramid, cone & cylinder with axis horizontal / vertical with construction of isometric scales.

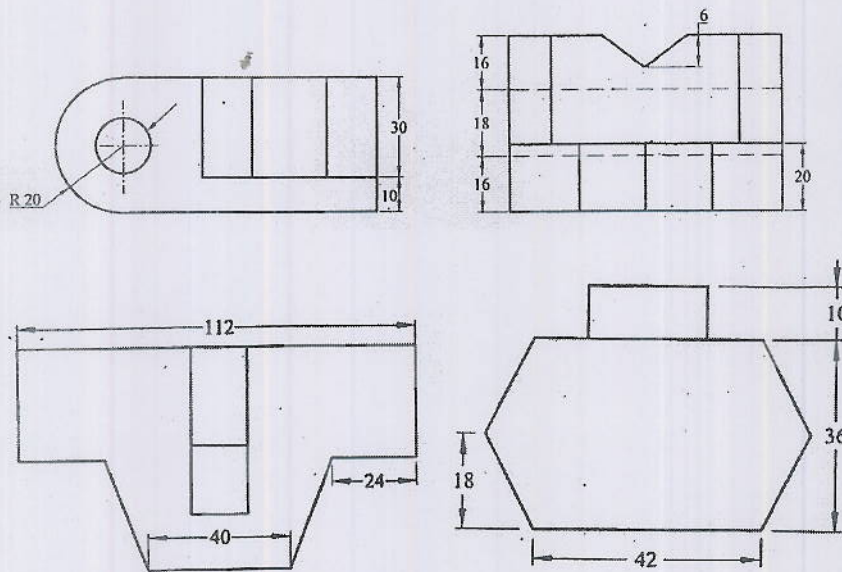
## 9.0 BUILDING DRAWING

9.1 Draw plan, elevation of single room building with verandah (Flat roof according to given line plan and specification).

### 9.0 Practice on AutoCAD

9.1 AutoCAD commands-Draw commands(Line, circle, arc, polygon, ellipse, rectangle), Edit commands, Dimension commands and Modify Commands for two dimensional drafting only

9.2 Exercise: Write the AutoCAD commands for the followings and draw for practice.



(All dimensions are in mm, assume any dimension if required)

### Books Recommended

1. A Text Book of Engineering Drawing – Dr. R. K. Dhawan
2. A Text Book of Engineering Graphics & Auto CAD – K. Venugopal

### REFERENE BOOKS

1. A Text book of Engineering Drawing - N. D. Bhatt
2. Engineering Drawing - P. S. Gill
3. A Introduction to AutoCAD -2009 George Omura, Willey India Publishers

