

Table of contents

UNIT- I

Chapter 1 : Introduction to Engineering Drawing		1-1 to 1-34
1.1	Importance of Engineering Drawing	1-2
1.2	Introduction to Drawing Instrument and their Uses	1-2
1.2.1	Drawing Board and Drawing Table	1-3
1.2.2	T-square	1-4
1.2.3	Set Squares	1-4
1.2.4	Protractor	1-5
1.2.5	Scale	1-6
1.2.6	Roll-N-draw	1-6
1.2.7	Mini-drafter	1-7
1.2.8	Drawing Instrument Box	1-8
1.2.9	Proportional Divider	1-11
1.2.10	French Curves	1-12
1.2.11	Drafting Templates	1-12
1.2.12	Drawing Pencils	1-13
1.2.13	Pencil Sharpener	1-14
1.2.14	Sand-paper Block	1-15
1.2.15	Eraser and Erasing Shield	1-15
1.2.16	Duster or Handkerchief	1-15
1.2.17	Drawing Pins, Clips or Adhesive Tapes	1-15
1.2.18	Paper Box	1-16
1.3	Drawing Sheet Layout and its Sizes	1-16
1.3.1	Drawing Paper / Sheet sizes	1-18
1.4	Types of Lines and their Applications	1-19
1.5	Dimensioning Terminology and Methods	1-22
1.5.1	Systems of Dimensioning	1-24
1.5.2	Practical Hints on Dimensioning	1-25

Chapter 2 : Engineering Curves 2-1 to 2-38

2.1	Introduction	2-2
2.2	Classification of Curves	2-2
2.3	Conics	2-2
2.4	Mathematical Analysis of Conics	2-5
2.4.1	Conic Terminology	2-5
2.5	Ellipse	2-6
2.5.1	Application of Ellipse	2-6
2.5.2	General Methods of Construction of an Ellipse	2-6
2.6	Parabola	2-11
2.6.1	Application of Parabola	2-11
2.6.2	General Methods of Construction of a Parabola	2-12
2.7	Hyperbola	2-16
2.7.1	Application of Hyperbola	2-17
2.7.2	General Methods of Construction of a Hyperbola	2-17
2.8	Cycloids	2-20
2.9	Involute	2-25
2.9.1	Involute of a Circle	2-25
2.10	Archimedean Spiral	2-28
2.10.1	Application of Spiral	2-29
2.11	Helix	2-31
2.11.1	Helix on a Cylinder	2-32
2.11.2	Helix on a Cone	2-33

UNIT- II

Chapter 3 : Orthographic Projections 3-1 to 3-36

3.1	Procedure of Preparing Orthographic Views by using First-Angle Projection Method	3-2
3.2	Precedence of Lines	3-5
3.3	Method of Drawing Hidden Lines	3-5
3.4	Methods of Drawing Centre Lines	3-5
3.5	Identification of Surfaces	3-5
3.6	Fillets, Rounds and Runouts	3-5
3.7	Orthographic Views of Elementary Objects	3-5
3.8	Solved Problems	3-5

Chapter 4 : Sectional Orthographic Projections **4-1 to 4-44**

4.1	Introduction	4-2
4.2	Hatching	4-3
4.3	Ribs in Section	4-4
4.4	Different Types of Holes	4-8
4.5	Solved Examples	4-10

UNIT- III

Chapter 5 : Isometric Projections **5-1 to 5-82**

5.1	Introduction	5-2
5.2	Types of Pictorial Projections	5-2
5.3	Types of Axonometric Projections	5-3
	5.3.1 Isometric Projection	5-3
	5.3.2 Diametric Projection	5-3
	5.3.3 Trimetric Projection	5-3
5.4	Isometric Projection of a Cube	5-4
5.5	Key Terms	5-4
5.6	Isometric View or Drawing and Isometric Projection	5-8
5.7	Construction of Isometric Point	5-9
5.8	Construction of Isometric Planes	5-9
	5.8.1 Polygon	5-9
	5.8.2 Circle and Semi-circle	5-12
5.9	Construction of Isometric Solid	5-16
	5.9.1 Isometric Construction of Prism	5-17
	5.9.2 Isometric Construction of Pyramid and its Frustum	5-18
	5.9.3 Isometric Construction of Cylinder and Semi-Cylinder	5-20
	5.9.4 Isometric Construction of Cone and its Frustum	5-23
	5.9.5 Construction of Isometric Spheres	5-25
5.10	Construction of Isometric Solid Having Irregular Curve	5-26
5.11	Solved Problems	5-27

Chapter 6 : Free Hand Sketching **6-1 to 6-6**

6.1	Introduction.....	6-2
6.2	Free Hand Sketching.....	6-2

6.2.1	Sketching Instruments	6-2
6.2.2	Steps in Free Hand Sketching.....	6-2
6.2.3	Guidelines for Freehand Sketching of Straight Lines.....	6-3
6.2.4	Sketching of Arc or Circles.....	6-3
6.2.5	Free Hand sketches for Existing or Innovative Products.....	6-5

UNIT- IV**Chapter 7 : Development of Lateral Surface of Solids****7-1 to 7-48**

7.1	Introduction	7-2
7.2	Application of Development of Surfaces in Industries	7-2
7.3	Introduction to AIP & AVP.....	7-2
7.4	Types of Section Planes.....	7-3
7.4.1	Section Plane Perpendicular to V.P. and Parallel to H.P.	7-3
7.4.2	Section Plane Perpendicular to V.P. and Inclined to H.P.	7-4
7.4.3	Section Plane Perpendicular to H.P. and Parallel to V.P.	7-4
7.4.4	Section Plane Perpendicular to H.P. and Inclined to V.P.	7-5
7.4.5	Section Plane Perpendicular to Both H.P. and V.P.	7-6
7.5	Methods of Development	7-6
7.5.1	Parallel-Line Development	7-6
7.5.2	Radial-line Development	7-6
7.5.3	Approximate Method	7-6
7.6	Development of Prisms	7-7
7.6.1	Solved Examples on Development of Prisms	7-8
7.7	Development of Lateral Surface of Pyramid	7-17
7.7.1	Solved Examples on Lateral Surface of a Pyramid	7-17
7.8	Development of Cylinder	7-29
7.9	Solved Examples	7-29
7.10	Development of Lateral Surface of a Cone	7-36
7.10.1	Solved Examples on Development of the Lateral Surface of a Cone	7-37

Chapter 8 : Introduction to Computer Aided Drafting**8-1 to 8-76**

8.1	Introduction	8-2
8.2	Advantages of CAD	8-2
8.3	Hardware and Other Devices	8-3
8.4	Basic Shapes and Objects	8-3

8.5	Understanding Co-ordinate System	8-4
8.6	About AutoCAD Package	8-5
8.6.1	Operating AutoCAD using Toolbar	8-5
8.6.2	Operating AutoCAD using Command Line	8-5
8.7	Starting with AutoCAD	8-5
8.8	Introduction to GUI of CAD	8-6
8.9	Various Command in AutoCAD and Its Usage	8-9
8.9.1	Drawing Commands	8-9
8.9.2	Modify Commands	8-23
8.9.3	Dimensioning Commands	8-33
8.9.4	Formatting Commands	8-35
8.9.5	View Menu	8-39
8.9.6	Edit Commands	8-40
8.9.7	File Commands	8-41
8.10	Introduction to 3D Primitives	8-42
8.11	Solved Problems	8-47

