CONTENTS

1	Stress	3	4	Axial Load 1
1.2 1.3 1.4 1.5	Chapter Objectives 3 Introduction 3 Equilibrium of a Deformable Body 4 Stress 22 Average Normal Stress in an Axially Loaded Bar 24 Average Shear Stress 32 Allowable Stress Design 46 Limit State Design 48		4.2 4.3 4.4 4.5 4.6 4.7	Chapter Objectives 123 Saint-Venant's Principle 123 Elastic Deformation of an Axially Loaded Member 125 Principle of Superposition 140 Statically Indeterminate Axially Loaded Members 140 The Force Method of Analysis for Axially Loaded Members 147 Thermal Stress 155 Stress Concentrations 162 Inelastic Axial Deformation 165
2	Strain	69	*4.9	Residual Stress 167
2.1 2.2	Chapter Objectives 69 Deformation 69 Strain 70		5	Torsion 1 Chapter Objectives 183
3.4 3.5 3.6	Mechanical Properties of Materials Chapter Objectives 85 The Tension and Compression Test 85 The Stress-Strain Diagram 87 Stress-Strain Behavior of Ductile and Brittle Materials 91 Strain Energy 95 Poisson's Ratio 106 The Shear Stress-Strain Diagram 108 Eally of Materials Duc to Crosp	85	5.4 5.5 *5.6 *5.7 5.8	Torsional Deformation of a Circular Shaft 183 The Torsion Formula 186 Power Transmission 194 Angle of Twist 206 Statically Indeterminate Torque-Loaded Members 222 Solid Noncircular Shafts 229 Thin-Walled Tubes Having Closed Cross Sections 232 Stress Concentration 242
*3.7	Failure of Materials Due to Creep and Fatigue 111		*5.9 *5.10	Inelastic Torsion 245 Residual Stress 247

_				
Co	18	TE	NIT	
-	NI	1 =	IV I	- 2

Energy Methods

723

6	Bending	26
	Chapter Objectives 263	
6.1	Shear and Moment Diagrams 263	
6.2	Graphical Method for Constructing She	ar
	and Moment Diagrams 270	
6.3	Bending Deformation of a Straight	
	Member 289	
6.4	The Flexure Formula 293	
6.5	Unsymmetric Bending 310	
*6.6	Composite Beams 320	
*6.7	Reinforced Concrete Beams 323	
*6.8	Curved Beams 327	
6.9	Stress Concentrations 334	
*6.10	Inelastic Bending 344	
	아무슨, 이 소문가 전혀 보았습니다.	

7	Transverse Shear 36	7
	Chapter Objectives 367	
7.1	Shear in Straight Members 367	
	The Shear Formula 368	
7.3	Shear Flow in Built-Up Members 386	
7.4	Shear Flow in Thin-Walled Members 395	1
*7.5	Shear Center for Open Thin-Walled	
	Members 400	

_		
8	Combined Loadings	413
	Chapter Objectives 413	
	Thin-Walled Pressure Vessels 413	
	State of Stress Caused by Combined	l .
	Loadings 420	

9	Stress Transformation	44
	Chapter Objectives 445	
9.1	Plane-Stress Transformation 445	
9.2	General Equations of Plane-Stress	
	Transformation 450	
9.3	Principal Stresses and Maximum In-P	lane
	Shear Stress 453	
9.4	Mohr's Circle—Plane Stress 469	
9.5	Absolute Maximum Shear Stress 48	11
1 1 - 1 - 1	그 사람들은 사람들이 되는 사람들이 가지 않는 것이 되었다. 그 사람들이 가지 않는 그들은 그를 모든 것이 되었다. 사람들이 없는 사람들이 없는 것이다.	1.2

10	Strain Transformation 493
	Chapter Objectives 493
10.1	Plane Strain 493
10.2	General Equations of Plane-Strain
	Transformation 494
*10.3	Mohr's Circle—Plane Strain 502
*10.4	Absolute Maximum Shear Strain 510
10.5	Strain Rosettes 512
10.6	Material Property Relationships 516
*10.7	Theories of Failure 528
14 July 2010	네는 물리 교육 사람들이 보는 사람이 다른 어떻게 하지 않아 보다 했다.

11	Design of Beams and
	Shafts 545
	Chapter Objectives 545
11.1	Basis for Beam Design 545
11.2	Prismatic Beam Design 548
*11.3	Fully Stressed Beams 562
*11.4	Shaft Design 566

2	Deflection of Beams	14
_	and Shafts 577	14
	Chapter Objectives 577	
12.1	The Elastic Curve 577	14.1
12.2	Slope and Displacement by	14.2
	Integration 581	
12.3	Discontinuity Functions 599	14.3
12.4	Slope and Displacement by the	14.4
	Moment-Area Method 611	*14.5
12.5	Method of Superposition 626	*14.6
12.6	Statically Indeterminate Beams	
	and Shafts 634	*14.7
12.7	Statically Indeterminate Beams and	
	Shafts—Method of Integration 635	*14.8
12.8	Statically Indeterminate Beams and	*14.9
	Shafts—Moment-Area Method 640	
12.9	Statically Indeterminate Beams and	*14.10
	Shafts—Method of Superposition 646	

	Chapter Objectives 5//		in the second	Chapter Objectives 723
12.1	The Elastic Curve 577		14.1	External Work and Strain Energy 723
12.2	Slope and Displacement by		14.2	Elastic Strain Energy for Various Types
	Integration 581			of Loading 728
*12.3	Discontinuity Functions 599		14.3	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Slope and Displacement by the		14.4	Impact Loading 748
	Moment-Area Method 611		*14.5	Principle of Virtual Work 759
12.5	Method of Superposition 626		*14.6	Method of Virtual Forces Applied
12.6				to Trusses 762
	and Shafts 634		*14.7	Method of Virtual Forces Applied
12.7	Statically Indeterminate Beams and			to Beams 770
	Shafts—Method of Integration 63		*14.8	
*12.8	Statically Indeterminate Beams and		*14.9	
	Shafts-Moment-Area Method 64	- · · · · · · · · · · · · · · · · · · ·		to Trusses 781
12.9	Statically Indeterminate Beams and		*14.10	
	Shafts—Method of Superposition			to Beams 784
				Į.
13	Buckling of Columns	665	Appe	
l J	Buckling of Columns	003		Geometric Properties of an Area 792
			В	Geometric Properties of Structural
				•
131	Chapter Objectives 665	ing ang Pilipangan a Panggangan ang Pilipangan ang		Shapes 806
13.1	Critical Load 665			•
13.2	Critical Load 665 Ideal Column with Pin Supports 66	88	С	Shapes 806 Slopes and Deflections of Beams 814
13.2	Critical Load 665 Ideal Column with Pin Supports 66 Columns Having Various Types of	58	C Solut	Shapes 806 Slopes and Deflections of Beams 814 ions and Answers for
13.2 13.3	Critical Load 665 Ideal Column with Pin Supports 66 Columns Having Various Types of Supports 674	88 38	C Solut Prelin	Shapes 806 Slopes and Deflections of Beams 814 ions and Answers for ninary Problems 816
13.2 13.3 *13.4	Critical Load 665 Ideal Column with Pin Supports 66 Columns Having Various Types of Supports 674 The Secant Formula 686	8	C Solut Prelin	Shapes 806 Slopes and Deflections of Beams 814 ions and Answers for ninary Problems 816 amental Problems Partial
13.2 13.3 *13.4 *13.5	Critical Load 665 Ideal Column with Pin Supports 66 Columns Having Various Types of Supports 674 The Secant Formula 686 Inelastic Buckling 692	8	C Solut Prelin	Shapes 806 Slopes and Deflections of Beams 814 ions and Answers for ninary Problems 816
13.2 13.3 *13.4	Critical Load 665 Ideal Column with Pin Supports 66 Columns Having Various Types of Supports 674 The Secant Formula 686 Inelastic Buckling 692 Design of Columns for Concentric	8	C Solut Prelir Fund Solut	Shapes 806 Slopes and Deflections of Beams 814 ions and Answers for ninary Problems 816 amental Problems Partial ions and Answers 826
13.2 13.3 *13.4 *13.5	Critical Load 665 Ideal Column with Pin Supports 66 Columns Having Various Types of Supports 674 The Secant Formula 686 Inelastic Buckling 692 Design of Columns for Concentric Loading 700	38	Solut Prelin Fund Solut Selec	Shapes 806 Slopes and Deflections of Beams 814 ions and Answers for ninary Problems 816 amental Problems Partial ions and Answers 826 ted Answers 848
13.2 13.3 *13.4 *13.5 *13.6	Critical Load 665 Ideal Column with Pin Supports 66 Columns Having Various Types of Supports 674 The Secant Formula 686 Inelastic Buckling 692 Design of Columns for Concentric Loading 700	38	Solut Prelin Fund Solut Selec	Shapes 806 Slopes and Deflections of Beams 814 ions and Answers for ninary Problems 816 amental Problems Partial ions and Answers 826