

INDEX

PART - I STATUTORY COMPLIANCE

CHAPTER	CONTENTS	PAGE NO.
---------	----------	----------

A - Factory Act

1	Approval Of Factory	1
2	Dangerous Machines	4
3	Hoists & Lifts	16
4	Lifting Tools & Tackles & Lifting Machines	20
	Lifting machines, chains, ropes & lifting tackles	
	Wire ropes & wire ropes slings	
	Lifting clamps	
	Chain Pulley block	
	Pulley & lifting machine	
	Cranes	
	IS standards for lifting tackles & lifting machines	
5	Pressure Plants	92
6	Provision regarding means of access, dangerous fumes, hazardous chemicals & processes, fire protections Means of access	102
	Fire protection	
	Provision related to hazardous processes	
	Ship building, ship breaking & ship repairing	
	Safety Audit & safety report	
	Indicative criteria & list of chemicals	
	Hazop study	
7	Dangerous Operations	154
8	Noise Level	158

B - Extract from Petroleum Rules 2002

1	Electric Installation	160
2	Storage of Petroleum Requiring License	163
3	Rule-126 Certificate of Tank Testing	165
4	Rule 130 Certificate of Tank Safety	167
5	Storage Of Petroleum Class-C	171
6	Licences	172
7	Tables Of Distances	174
8	Different Class of Petroleum Products with Flash Points	183

C - Extract from Static & Mobile Pressure Vessels (Unfired) Rules-1981

1	Preliminary	185
2	Rule-18 Certification Of Safety Valves	188
3	Rule-19 Testing of Pressure Vessels	192
4	Storage & Table of Distances	198
5	Rule-33 Certificate Of Safety	207

CHAPTER	CONTENTS	PAGE NO.
---------	----------	----------

D - IBR ACT & O&M Of Boilers

1	Extract from Indian Boiler Act 1923	216
2	Operation and Maintenance of Boiler	219
3	Boiler & Steam Utilisation	229
4	Residual Life Assessment Study	245

E - Extract from The Standards of Weights & Measures (Enforcement) Act-1985

1	Standard of Weight and Measures (Enforcement)	248
2	Calibration Of Storage Tanks	248

F - Non Destructive Examination of Process Plant Equipments

1	NDT Techniques	251
2	Periodic Inspection & Corrosion Analysis	257
3	Stage wise & Final Inspection for Fabricated Equipments	271

PART - II MECHANICAL EQUIPMENTS

1	Pumps	275
	Basic concepts	
	Types of pumps	
	Pump characteristics	
	NPSH and cavitations	
	Pumps selection	
	Pump application guide	
	Pump maintenance	
2	Valves	305
	Basic concept	
	Categorisation of valve	
	Selecting the appropriate set of valves	
	Valves maintenance	
	Valves for chlorine transportation	
3	Sizing of Safety Relief Valve as per IS:2825	325
	SRV Testing procedure	
4	Sealing Components for Pumps & Valves	328
5	Mechanical Seals	336
	Mechanical seals design & classification	
	Application engineering & seals selection	
6	Materials for Pumps, Valves & Piping	345
	Materials used for pipes	
	Areas of applications	
	Common plastics for pipe	
	General consideration	
7	Coating and Wrapping of Under Ground Piping	352
8	Steam Traps	357
	Characteristics	

CHAPTER	CONTENTS	PAGE NO.
	Classification	
	Various types of steam traps	
9	Gaskets	363
	Function of gaskets in the family of flange joints	
	Types of gaskets	
	Factor for selection	
	Flanges	
	Trouble shooting of leaking joints	
	Selecting the proper gasket material	
	Gasket installation procedures	
10	Pressure Vessels (Design Formulae) & Allowable Stress Values of Commonly Used Materials	370
	Pressure Vessel Design Formulae	
	Allowable Stress values of commonly used materials	
11	Heat Exchangers	380
	General	
	Classification of heat exchangers	
	General design consideration	
	TEMA designation for shell & tube type heat exchanger	
	Principal type of construction	
	Tube side construction	
	Shell side construction	
	Baffles and tube bundles	
	Double pipe exchangers	
	Air cooled heat exchangers	
	Maintenance of heat exchangers and their selection guide	
12	Safety in Design and Operation of Storage Tank	397
	Codes & standards	
	Storage tanks	
	Design code	
	Classification	
	Design & construction	
	Calibration	
	Anchors	
	Foundation	
	Testing	
	Reasons for failures of cone roof storage tank	
	General safety requirements	
13	Lining of Process Equipments	409
	Lining of process equipments with metallic sheets	
	Lining of process equipments with thermoplastics	
14	Bearings	417
	Selection of bearing type	
	Types of rolling bearings	

CHAPTER	CONTENTS	PAGE NO.
	Bearings installation	
	Bearing lubrication	
	Interchange data - seals, shields snap ring	
15	Rotating Machinery Alignment	436
	Introduction	
	Understanding alignment	
	Effects of misalignment	
	Types of misalignment	
	Coupling	
	Alignment tolerances	
	Measurement instruments & alignment tools	
	Selecting the machine to be adjusted	
	Alignment techniques	
	Basket sag or indicator sag	
	Hot alignment	
16	Condition Monitoring Of Equipments	448
	Introduction to condition monitoring	
	Defects detected by VM	
	Vibration fundamentals	
	Vibration parameters	
17	Vibration Measuring Instrument & Analysis	456
18	Vibration Signature Analysis	460
	Introduction	
	Most common machinery problems	
	Electrical faults	
	Belt defects	
	Gear defects	
19	Vibration Standards	465
20	Criteria for Judgment Of Mechanical Vibration Of Machines	468
	Introduction	
	Judgment of the machinery groups	
	Vibration severity steps & criteria for judgment	
21	Limits & Fits	476
22	Mechanics, Dynamics and Kinetics	481

PART - III TABLES

TABLES

01	Pipes and Fitting Dimensions	491
02	Rolled Steel Structural Sections	500
03	Gaskets & Lubricating Oil Charts	507
04	Circlips	508
05	ISO Metric Screw Threads	515
06	Stud Dimensions	516
07	Engineering Drawing	516
08	Surface Roughness	517

CHAPTER	CONTENTS	PAGE NO.
09	Thermal Conductivity of Metals for Different Temperatures	518
10	Gas Loss Due to Leakage from Orifice	519
11	Formulae for Perimeters/Circumference Area of Plane Figures	519
12	Useful Formulae for Volumes and Surface Areas of Solids	520
13	Conversion Tables	523
14	Conversion Tables for Viscosity Scales	526
15	Conversion Tables for Temperatures	527
16	Data for Common Alloy Steel	528
17	Indian Standard Wire Gauges & British Wire Gauges	529

PART - IV GENERAL

01	Preservation Of Engineering Items & Spares	530
02	Inventory Management	531
	Calendar for 100 Years	

PART - I