

ELEMENTS OF FERTILIZER TECHNOLOGY

OP Gupta



Elements of Fertilizer Technology

Author :	O.P. Gupta
ISBN 13 :	978-93-74549-87-2
ISBN 10 :	93-74549-87-5
E-ISBN 13 :	978-93-74549-87-2
Edition :	First
Pages :	278
Type of book :	Paperback
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 460.00
Categories :	Chemical Engineering
Condition Type :	New
Country Origin :	India

Product Description

Elements of Fertilizer Technology Authored by chemical engineer Om Prakash Gupta, this book is a comprehensive guide covering the entire fertilizer industry-from soil science to advanced manufacturing. It details the production of key fertilizers like Urea, Nitric Acid, and NPK blends, while addressing environmental challenges like pollution control. Designed for clarity, it is an essential resource for chemical engineering students, faculty, and industry professionals, combining theoretical knowledge with practical tools like objective-type questions. **Salient**

Features

- **Comprehensive Nutrient Analysis:** The book provides an in-depth exploration of primary, secondary, and micronutrients, detailing their specific roles in plant metabolism, growth, and disease resistance
- **Industrial Manufacturing Processes:** It offers technical insights into the production of nitrogenous, phosphatic, and potassic fertilizers, including detailed sections on ammonia synthesis and sulfuric acid manufacture
- **Complex NPK Formulation:** Readers gain a clear understanding of compound and complex fertilizers, including the chemistry behind NPK grades and various granulation techniques used in industrial production.
- **Environmental Stewardship:** A dedicated section focuses on environmental pollution control, covering air emission prevention, wastewater treatment, and the management of hazardous byproducts like fluorides and phosphogypsum.
- **Practical Application Strategies:** The text describes diverse fertilizer application methods-such as broadcasting, placement, and foliar treatment to help maximize nutrient use efficiency and minimize environmental runoff.
- **Sustainable Organic Perspectives:** Beyond synthetic chemicals, the book discusses organic manures and bio-fertilizers, highlighting their role in building soil organic matter and improving long-term soil fertility.
- **Assessment and Exam Prep:** To aid student learning, the book includes over 303 chapters of content supplemented by numerous objective and short-answer questions designed for competitive exam preparation.
- **Technical Glossary and References:** A robust glossary of industry terms and a factsheet on fertilizer application provide quick-reference value for both students and practicing engineers.



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Author

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.



Khanna's

Objective Type
Questions & Answers in**ENVIRONMENTAL
CHEMISTRY****OP GUPTA****Khanna's Objective Type
Questions & Answers in
Environmental Chemistry**

Author :	O.P. Gupta
ISBN 13 :	978-93-74544-27-3
ISBN 10 :	93-74544-27-X
E-ISBN 13 :	978-93-74544-27-3
Edition :	First
Pages :	220
Type of book :	Paperback
Year :	2026
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 350.00
Categories :	OBJECTIVE TYPE BOOKS
Condition Type :	New
Country Origin :	India

Product Description

Khanna's Objective Type Questions & Answers in Environmental Chemistry Objective Type Questions & Answers in Environmental Chemistry by O.P. Gupta is comprehensive academic resource designed to provide a structured and evaluative approach to the study of environmental sciences. Published by Khanna book Publishing, this 2025 edition serves as a vital tool for students and professionals navigating the complexities of atmospheric, aquatic, and terrestrial chemistry. The book is meticulously divided into three primary sections: a rigorous collection of objective-type questions with answers, detailed short-answers questions that explore fundamental mechanisms, and an extensive glossary of technical terms to ensure conceptual clarity. The core theme revolves around the chemical phenomena occurring in the environment and the impact of human activities on natural cycles. Its primary purpose is to aid readers in mastering the syllabus of various competitive and professional examinations. The target audience includes undergraduate and postgraduate engineering and science students, as well as candidates preparing for associate membership examinations like AMIE, AMIM, and AMIChE. By blending theoretical depth with a question-and-answer format, the book offers immense practical value for exam preparation and professional reference, maintaining a tone that is both intellectually stimulating and accessible. **Salient Features:**

- **Examination-Oriented Structure:** The book is strategically organized into objective questions, short-answer explanations, and a glossary, specifically tailored to meet the curriculum requirements of engineering and science degree programs.
- **Atmospheric Chemistry Insights:** It provides in-depth coverage of atmospheric layers, ozone depletion mechanisms, and the chemistry of greenhouse gases like CO₂ and CH₄ to explain global warming.
- **Aquatic Ecosystem Analysis:** Detailed sections Explore water pollution, eutrophication, and the “oxygen sag curve,” offering readers a clear understanding of how pollutants effect dissolved oxygen and aquatic life.
- **Waste Management Solutions:** the text covers practical methodologies for managing solid and hazardous wastes, including sanitary landfills, composting, and the “Extended producer’s Responsibility” (EPR) for plastic waste.
- **Pollution Control Technologies:** It discusses industrial and domestic pollution mitigation, featuring methods such as cooling towers for thermal pollution and secondary/tertiary treatments for wastewater.
- **Biogeochemical Cycle Expertise:** Readers gain



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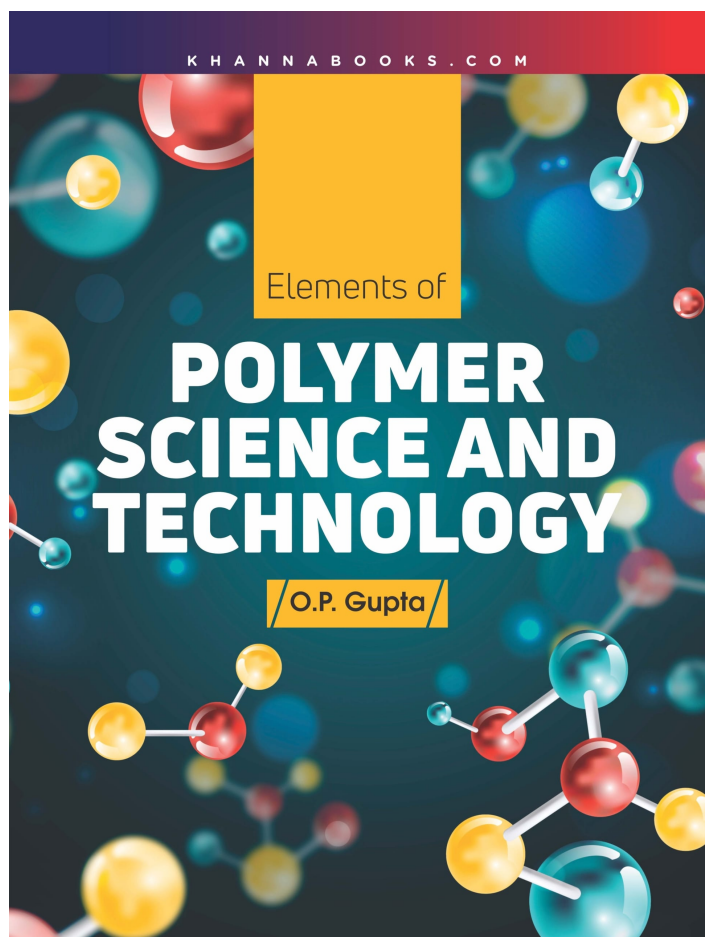
- SECTION C

Glossary

Author

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Elements of Polymer Science and Technology

Author :	O.P. Gupta
ISBN 13 :	978-93-55384-56-0
ISBN 10 :	93-55384-56-4
E-ISBN 13 :	978-93-55384-56-0
Edition :	1
Pages :	340
Type of book :	Paperback
Weight (g) :	510.00
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 475.00
Categories :	Chemical Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book covers the manufacture, properties of important polymers-plastics, rubbers & synthetic fibers. Important Information about various raw materials used for polymer industries, various polymers processing technologies & status of Indian polymer industry are also included. It also contains short questions & answers and multiple-choice questions & answers drawn from the examination papers of various engineering colleges for the benefits of the students. This book is targeted to benefit the following: 1. Diploma in engineering student. 2. Degree in engineering students. 3. AMIE , AMIIM , AMIICHE Students. 4. MSc. & B.Sc. Students. 5. Faculty members and teaching staff. 6. Practicing engineers / Professionals. The scope and coverage of subject matter presented can be gauged from glancing the contents portion of the book to judge its suitability and relevance for a particular target group of reader. Extensive use of internet resources has been made in gathering the relevant information and the subject matter has been presented in a simple, lucid and easy to understand manner for easy grasping of the subject. Latest and updated information /data/ statistics pertaining to the subject matter has been included in this edition for the benefit of the readers.

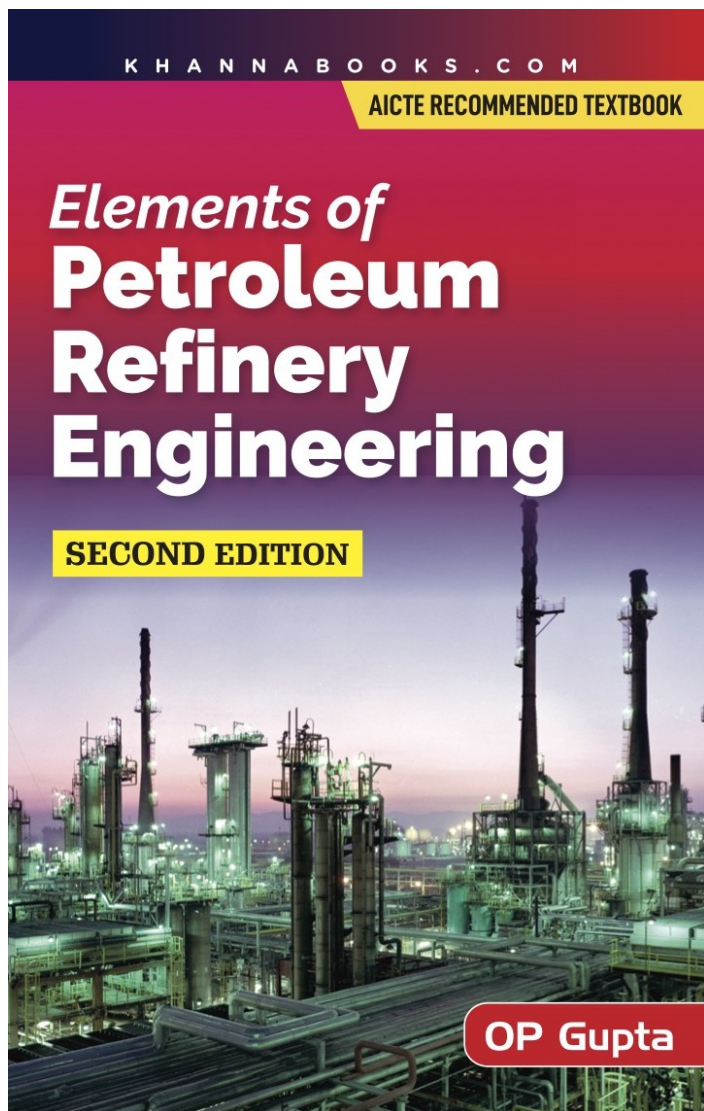
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Chapter 1: Manufacture, Properties & Applications of Important Plastics. **Chapter 2:** Manufacture, Properties & Applications of Important Elastomers (Rubbers). **Chapter 3:** Manufacture, Properties & Applications of Important Synthetic Fibers. **Appendices**

Authors

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Elements of Petroleum Refinery Engineering

Author :	O.P. Gupta
ISBN 13 :	978-93-82609-72-8
ISBN 10 :	93-82609-72-5
E-ISBN 13 :	978-93-82609-72-8
Edition :	2
Pages :	492
Type of book :	Paperback
Weight (g) :	580.00
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 365.00
Categories :	Chemical Engineering , Petroleum Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book is prepared in a simple, lucid & easy understandable language with special emphasis on crude oil refining technologies and scenario in Indian context. This book is meant for the students, teachers, practicing engineer, consultants and policy makers on petroleum refining. Extensive use of Internet resources has been made in gathering the relevant information and the subject matter has been presented in a simple lucid manner for easy understanding of the subject. This book is targeted to benefit the following: 1. Diploma in engineering students. 2. Degree in engineering students (B. Tech (Chemical Engineering,) B. Tech (Petroleum Engineering, B. Tech (Petrochemical Engineering), B. Tech (Aeronautical Engineering), AMIE, AMIICHE, Students etc. 3. Tech students of various disciplines pursuing courses on petroleum refining. 4. Faculty members/ Teaching staff of Engineering colleges/IIT's/NIT's etc. 5. Practicing petroleum engineers/consultants/refiners in various private sector/ public sector undertakings, state/ central government departments, NGO's etc. 6. Students of foreign universities of developing countries pursuing diploma/ degree/ postgraduate courses in various engineering disciplines having a paper in petroleum refinery engineering. 7. The scope and coverage of the subject matter presented can be gauged from glancing the contents portion of the book to judge its suitability and relevance for a particular target group.

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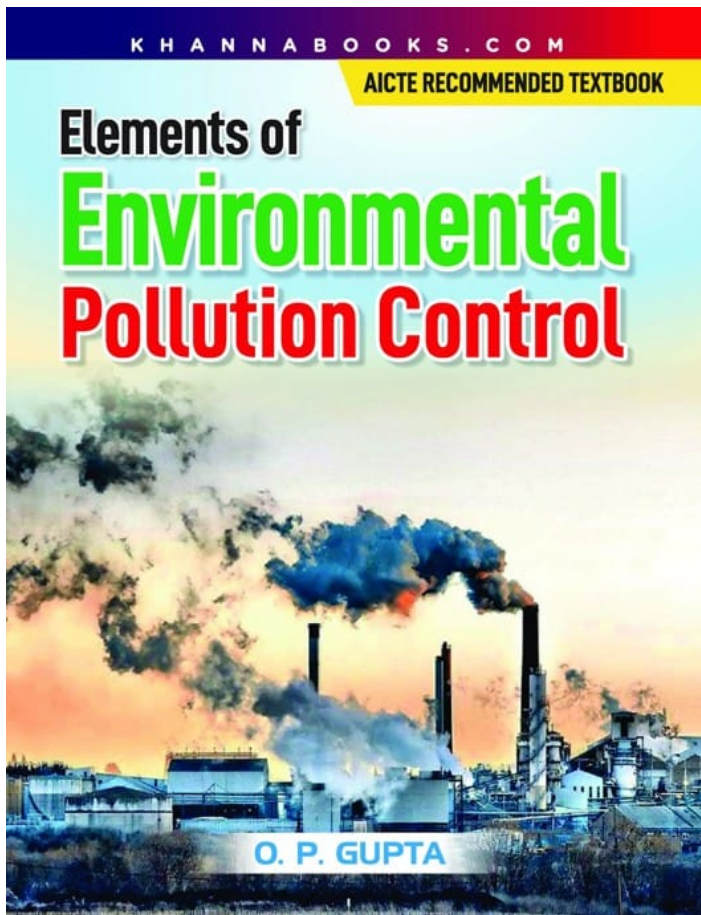
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Definition
Abbreviations
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Author

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Elements of Environmental Pollution Control

Author :	O.P. Gupta
ISBN 13 :	978-93-82609-66-7
ISBN 10 :	93-82609-66-0
E-ISBN 13 :	978-93-82609-66-7
Edition :	First
Pages :	872
Type of book :	Paperback
Weight (g) :	1150.00
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 565.00
Categories :	Civil Engineering , Environmental Engineering , Environmental Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book will cater to the needs of students who want to pursue a Diploma in Engineering, Degree in Engineering (B. Tech/B.E., B.Sc.(Eng.) students. Postgraduate degree in Engineering (M. Tech, M.E.) students. AMIE (Associate membership of Indian Institute of Metals) examination. AMIICHE (Associate Membership of Indian Institute of Chemical Engineers) examination. AIC (Associateship of Institute of Chemist) examination. Practicing engineers in the field of environmental engineering. Environmental engineering professionals.



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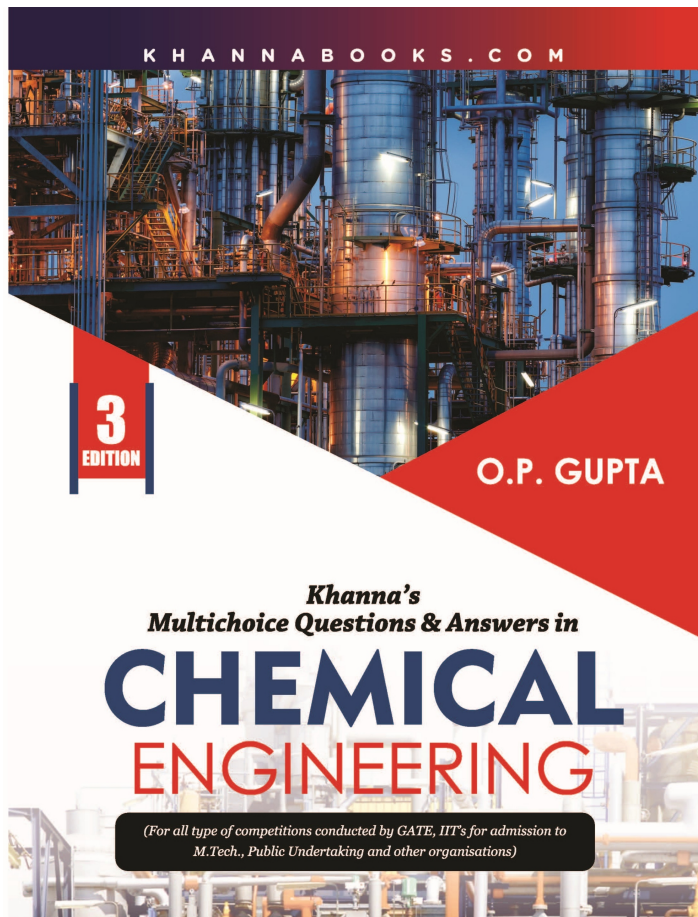
Abbreviations

Chapter 1: Introduction Classification Sources and Effect of Environmental Pollution. **Chapter 2:** Terminology, Definition, Data, Units and their Conversion. **Chapter 3:** Classification of Environmental Pollutants. **Chapter 4:** Environment Its Components and Bio-Geochemical Cycles. **Chapter 5:** Atmosphere and its Constituents. **Chapter 6:** Introduction of Air Pollution. **Chapter 7:** Effects of Environmental Pollution on Plants/Trees/Vegetation.

Author

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Khanna's Multi-Choice Questions and Answers in Chemical Engineering

Author :	O.P. Gupta
ISBN 13 :	978-93-55384-38-6
ISBN 10 :	93-55384-38-6
E-ISBN 13 :	978-93-55384-38-6
Edition :	3
Pages :	1100
Type of book :	Paperback
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 565.00
Categories :	OBJECTIVE TYPE BOOKS
Condition Type :	New
Country Origin :	India

Product Description

This book designed comprehensively for chemical engineering graduates for their academic program, various competitive examinations & GATE examination will serve as a 'Handbook of chemical Engineering'. It contain MCQ's drawn from the examination papers of various engineering college & GATE examination papers fully solved from 1990 to 2025. Following subjects of chemical engineering have been covered for college examinations, competitive examinations & GATE examinations.



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Author

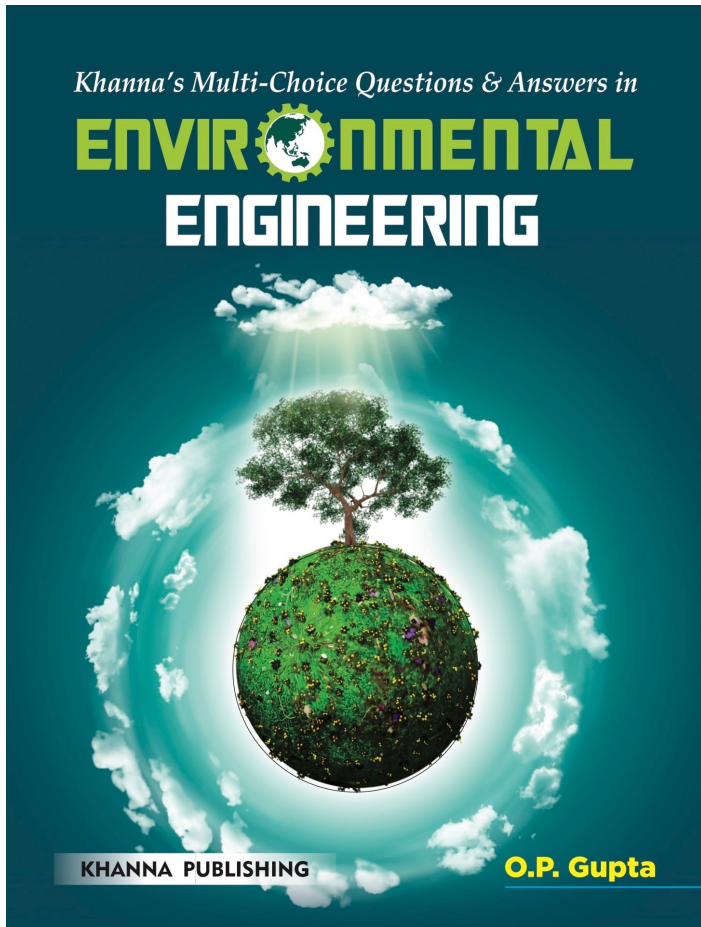
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Khanna's Multi-Choice Questions & Answers in Environmental Engineering

Author :	O.P. Gupta
ISBN 13 :	978-93-91505-07-3
ISBN 10 :	93-91505-07-4
E-ISBN 13 :	978-93-91505-07-3
Edition :	First
Pages :	582
Type of book :	Paperback
Weight (g) :	800.00
Year :	2021
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 450.00
Categories :	OBJECTIVE TYPE BOOKS
Condition Type :	New
Country Origin :	India

Product Description

This book covers the various topics of environmental engineering in the form of MCQ and Short Q&A; and is useful for degree, postgraduate & diploma courses in engineering, AMIE, AMIIM & AMIICHE examination. Subject matters has been presented in simple, lucid & easy to understand language and Covers all the topics included in the syllabus of various engineering colleges/Technical Institutes & Professional bodies examination papers. Latest and updated information/data/statistics pertaining to the subject matter has been included.



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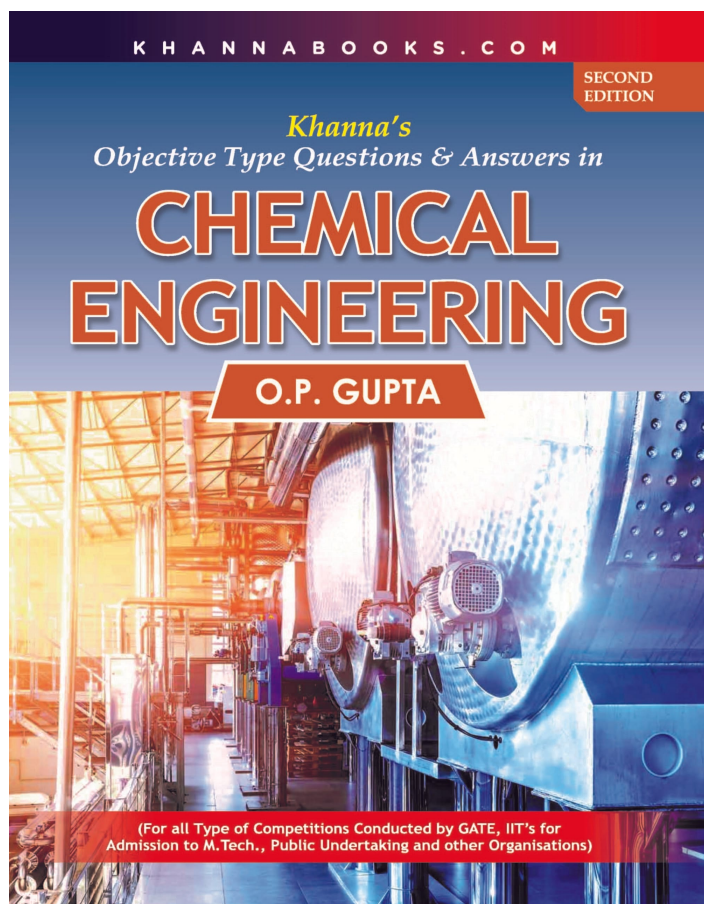
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Author

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Khanna's Objective Type Questions & Answers in Chemical Engineering

Author :	O.P. Gupta
ISBN 13 :	978-81-95123-19-3
ISBN 10 :	81-95123-19-8
E-ISBN 13 :	978-81-95123-19-3
Edition :	Second
Pages :	396
Type of book :	Paperback
Weight (g) :	530.00
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 425.00
Categories :	OBJECTIVE TYPE BOOKS
Condition Type :	New
Country Origin :	India

Product Description

This book is meant for diploma students of chemical engineering and petroleum engineering both for their academic program as well as for competitive examinations. This book contains 18 chapters covering title entire syllabus of diploma course in chemical engineering and petrochemical engineering. This book in its present form has been designed to serve as an encyclopedia of chemical engineering so as to be ready reckoner apart from being useful for all types of written tests and interviews faced by chemical engineering and petrochemical engineering students. So, this book will be equally useful for diploma in petrochemical engineering students.



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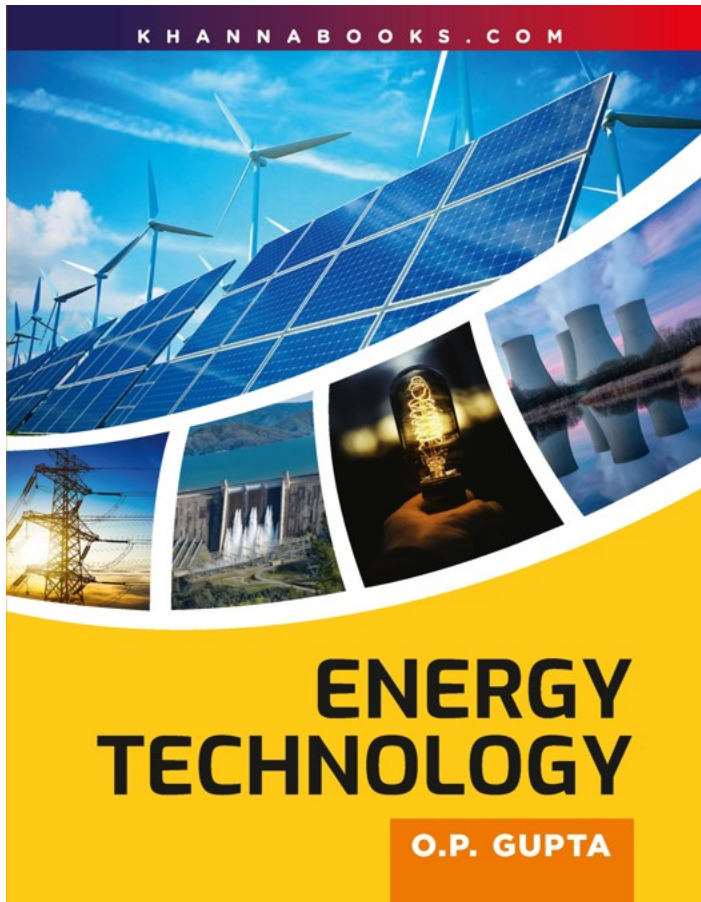
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Energy Technology

Author :	O.P. Gupta
ISBN 13 :	978-93-86173-68-3
ISBN 10 :	93-86173-68-9
E-ISBN 13 :	978-93-86173-68-3
Edition :	First
Pages :	850
Type of book :	Paperback
Weight (g) :	1130.00
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 595.00
Categories :	Electrical, Electronics & Communication Engineering , Environmental Engineering , Environmental Engineering
Condition Type :	New
Country Origin :	India

Product Description

Energy Technology is an integral part of the degree, postgraduate & diploma curriculum of various branches of engineering. besides, it is also a compulsory paper for various associate membership examination conducted by professional bodies like institution of engineering (AMIE), Indian Institute of Metals (AMIIM), Indian Institute of Chemical Engineering (AMIICHE), BEE etc. This book has been prepared strictly as per the syllabus of these examinations. Short questions & answer and multiple-choice questions & answers drawn from the examination papers of various engineering colleges and professional bodies examinations given at the end of the book enhances its utility for the student.



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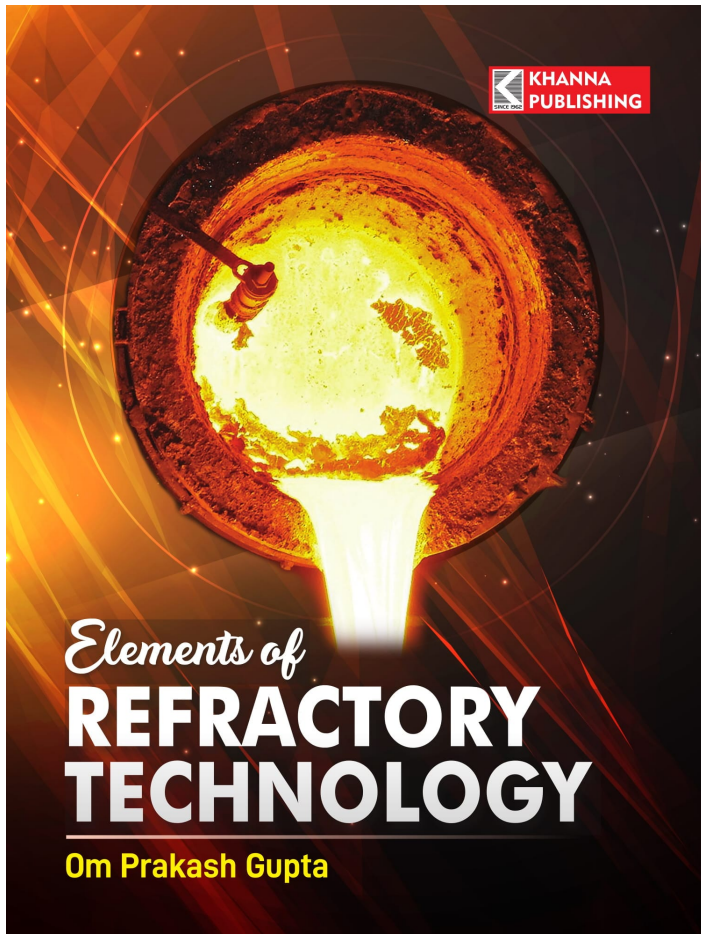
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Chapter 1: Introduction to energy basics and energy scenario. **Chapter 2:** Fuel and Combustion Technology. **Chapter 3:** Alternate fuels for transportation. **Chapter 4:** Furnaces. **Chapter 5:** Boilers. **Chapter 6:** Waste heat recovery. **Chapter 7:** Steam-properties & efficient utilization. **Chapter 8:** Thermal Insulation. **Chapter 9:** Refractories. **Chapter 10:** Basics of Electric Energy Uses. **Chapter 11:** Electric Transformers. **Chapter 12:** Electric Motors. **Chapter 13:** Fans and blowers. **Chapter 14:** Pumps and pumping system. **Chapter 15:** Cooling towers. **Chapter 16:** Compressed air system. **Chapter 17:** Refrigeration system. **Chapter 18:** Diesel Generator (DG) set system. **Chapter 19:** Energy efficient lighting systems. **Chapter 20:** Energy efficient technologies in electrical system. **Chapter 21:** Power Cogeneration. **Chapter 22:** Energy Conversion System. **Chapter 23:** Energy Storage Systems. **Chapter 24:** Energy Efficient Building. **Chapter 25:** Waste To Energy (WTE) Generation. **Short Question & Answer on Conventional Energy**

Author

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Elements of Refractory Technology

Author :	O.P. Gupta
ISBN 13 :	978-93-86173-64-5
ISBN 10 :	93-86173-64-6
E-ISBN 13 :	978-93-86173-64-5
Edition :	First
Pages :	320
Type of book :	Paperback
Weight (g) :	450.00
Year :	2019
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 299.00
Categories :	Chemical Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book describes the essential features of refractory technology and is useful for degree & diploma courses in engineering. AMIE, AMIIM and IICHE examinations. Short question & answers and multiple choice question & answers drawn from the examination paper of various engineering colleges and professional bodies examinations given at the end of the book enhances its utility for the students.



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Chapter 2: Manufacture, Properties and Applications of Important Refractories.

Chapter 3: Refractories used in Various Furnaces/Industries.

Chapter 4: Properties Testing of Refractory.

Chapter 5: Phase Equilibrium in Refractory materials.

Chapter-6: Insulating Refractories / Ceramic fibres.

Chapter-7: Special Refractories.

Chapter-8: Refractory - Cements/Mortars, Castables Ramming Masses.

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Appendix-B: Short Question & Answers on Refractory Technology.

Appendix-C: Multichoice Questions & Answer on 'Refractory Technology.

Appendix-D: Technical Data on Refractories.

Appendix-E: References/Bibliography/Further Reading.

Author

Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.



ELEMENTS OF
**CHEMICAL
PROCESS
TECHNOLOGY**

O.P. GUPTA

KHANNA PUBLISHING

Elements of Chemical Process Technology

Author :	O.P. Gupta
ISBN 13 :	978-93-86173-55-3
ISBN 10 :	93-86173-55-7
E-ISBN 13 :	978-93-86173-55-3
Edition :	First
Pages :	1040
Type of book :	Paperback
Weight (g) :	1510.00
Year :	2025
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 1,095.00
Categories :	Chemical Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book will be useful for degree & diploma Curriculum of Engineering and for various associate membership examinations conducted by professional bodies like Institution of Engineers(AMIE) and Indian Institute of chemical Engineers (AMIICHE) etc. Salient Features of This Book * Subject matter has been presented in simple, lucid & easy to understand language * Covers all the topics included in the syllabus of various engineering colleges/Technical Institutes & professional bodies examination papers.



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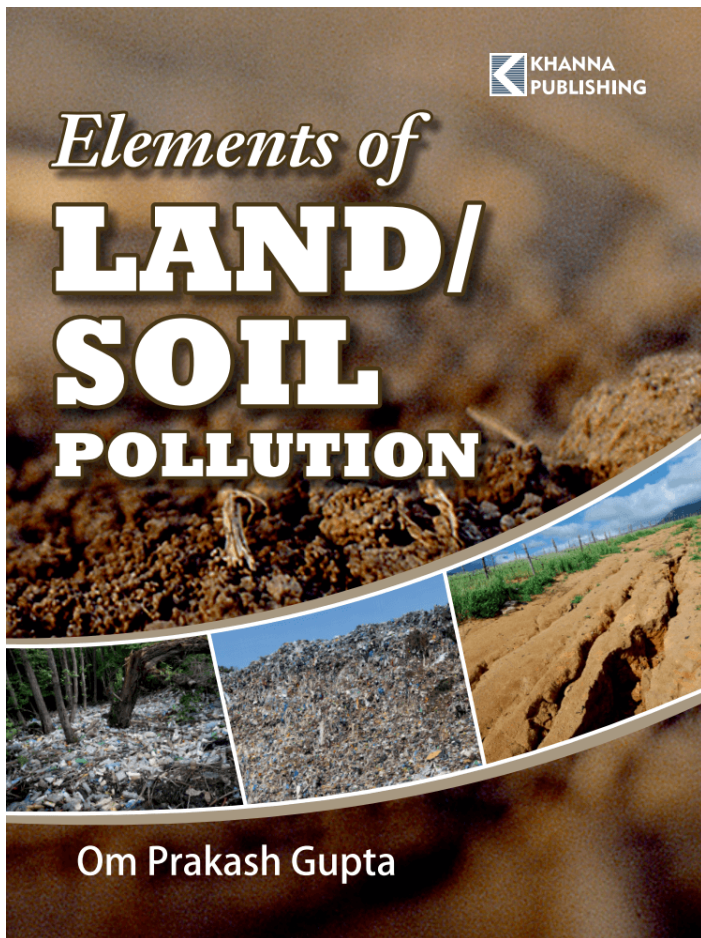
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Chapter 1: Water for industries and water treatment. **Chapter 2:** Acid industries: Sulphuric, Hydrochloric, Nitric and Phosphoric acids. **Chapter 3:** Alkali industries: Caustic soda, Sodium carbonate, Chlorine and Bleaching powder. **Chapter 4:** Fertilizers: Nitrogenous, phosphatic and potassic. **Chapter 5:** Glass and Ceramics. **Chapter 6:** Cement industry. **Chapter 7:** Refractories. **Chapter 8:** High Polymers- Plastics, Rubber and Fibers. **Chapter 9:** Petroleum Refinery. **Chapter 10:** Petrochemicals. **Chapter 11:** Oils and Fats: Refining, Hydrogenation, Fat splitting. **Chapter 12:** Soaps and Detergents. **Chapter 13:** Pulp and Paper industries. **Chapter 14:** Industrial fermentation- Ethyl alcohol. **Chapter 15:** Multiple choice Questions & Answers on Chemical Process Technology.

Author

Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Elements of Land/Soil Pollution

Author :	O.P. Gupta
ISBN 13 :	978-93-82609-73-5
ISBN 10 :	93-82609-73-3
E-ISBN 13 :	978-93-82609-73-5
Edition :	First
Pages :	208
Type of book :	Paperback
Weight (g) :	300.00
Year :	2019
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 299.00
Categories :	Civil Engineering , Environmental Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book contains detailed description of sources, effects and control of soil pollution spanning over five chapters. Besides, it also contains two chapters devoted to short questions & answers and multiple choice questions & answers drawn from the examination papers of various engineering colleges for the benefits of the students. Last chapter contains glossary of terms related to soil pollution. The book will be useful for degree & diploma curriculum of various branches of engineering and for various associate membership examinations conducted by professional bodies like Institution of Engineers (AMIE), Indian Institute of metals (AMIIM), Indian Institute of Chemical Engineers (AMIIChE), etc.

SALIENT FEATURES OF THE BOOK:

Subject matter has been presented in simple, lucid & understand language. Cover all the topics included in the syllabus of various engineering colleges/Technical Institutes & professional bodies examination papers. Short questions & answers and multiple choice questions & answers drawn from the examinations given at the end of the book enhances its utility for the students. Up to date statistics and glossary of terms related to the subject have been included.

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Chapter 1: All about Soil—Its Formation, Types, Components & Properties.

Chapter 2: Introduction to Soil Pollution.

Chapter 3: Causes, Types, & Sources of Soil Pollution.

Chapter 4: Effects of Land/Soil Pollution.

Chapter 5: Prevention & Control of Land/Soil Pollution.

Chapter 6: Short Questions & Answers on Soil Pollution.

Chapter 7: Multiple Choice Questions & Answers.

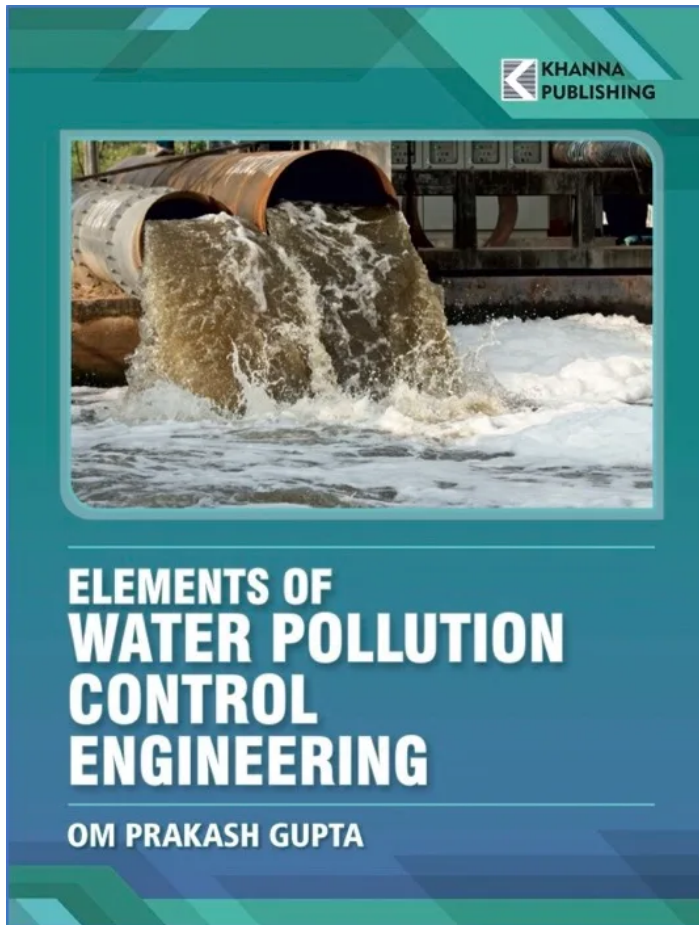
Chapter 8: Glossary of Terms Related to Soil Pollution.



Author

Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Elements of Water Pollution Control Engineering

Author :	O.P. Gupta
ISBN 13 :	978-93-86173-22-5
ISBN 10 :	93-86173-22-0
E-ISBN 13 :	978-93-86173-22-5
Edition :	First
Pages :	924
Type of book :	Paperback
Weight (g) :	1240.00
Year :	2019
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 450.00
Categories :	Civil Engineering , Environmental Engineering
Condition Type :	New
Country Origin :	India

Product Description

The book contains twelve chapters followed by appendices (meant for specific target reader groups) pertaining to complete domain of water pollution control engineering. Beside, it also contains two chapters devoted to short questions & answers and multiple choice questions & answers drawn from the examination papers of various engineering colleges for the benefits of the students. the book will be useful for degree & diploma curriculum or various branches of engineering and for various associate membership examinations conducted by professional bodies like Institution of Engineers (AMIE), Indian Institute of Metals (AMIIM), Indian Institute of Chemical Engineers (AMIICHE), Institute of Chemist etc. It will also be equally useful for M.Sc. & B.Sc. students. SALIENT FEATURES OF THE BOOK: Subject matter has been presented in simple, lucid & easy to understand language. Covers all the topics included in the syllabus of various engineering colleges/Technical Institutes & professional bodies examination papers. Short question & answers and multiple choice questions & answers drawn from the examination papers of various engineering colleges and professional bodies examinations given at the end of the book enhances its utility for students. Up to date statistics and glossary of terms related to the subject have been included.

Table of Contents

Chapter 1: Introduction to Water Pollution. **Chapter 2:** Characteristics and Properties of Water. **Chapter 3:** Purification of Water/Water Treatment. **Chapter 4:** Sources, Effects and Control of Water Pollution. **Chapter 5:** Waste Water/Sewage Treatment. **Chapter 6:** Industrial Waste Water and Its Treatment. **Chapter 7:** Water Quality and Standards. **Chapter 8:** Water Related Disease. **Chapter 9:** Thermal Pollution of Water. **Chapter 10:** Water Management. **Chapter 11:** Water Pollution Control Acts & Rules. **APPENDIX - A Appendix- B**

Author

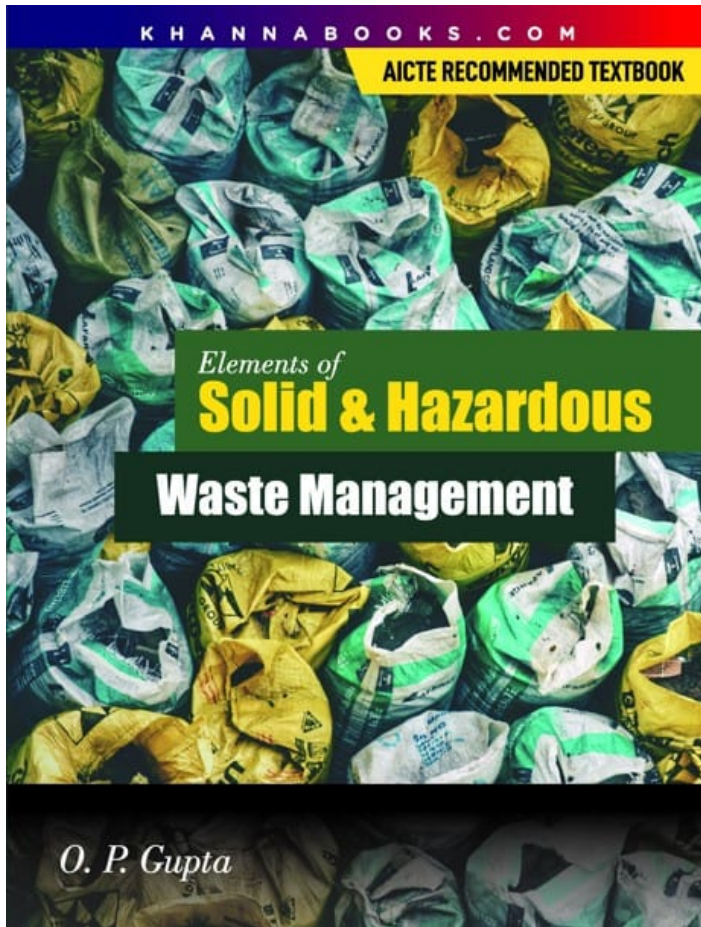
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Elements of Solid & Hazardous Waste Management

Author :	O.P. Gupta
ISBN 13 :	978-93-82609-75-9
ISBN 10 :	93-82609-75-X
E-ISBN 13 :	978-93-82609-75-9
Edition :	First
Pages :	392
Type of book :	Paperback
Weight (g) :	570.00
Year :	2023
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 450.00
Categories :	Environmental Engineering , Environmental Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book describes the essential features of Solid & Hazardous Waste Management covering the following topic:

1. Introduction to Solid Waste Management. 2. Municipal Solid Waste (MSW) Management . 3. Industrial Solid Waste Management. 4. Radioactive Waste (BMW) Management. 5. e- Waste Management. 6. Integrated Solid Waste Management (ISWM).

Besides, Short question & answers and multiple-choice questions & answers drawn from the examination papers of various engineering colleges and professional bodies examination given at the end of the book enhances its utility for the students.

The book will be useful for degree, postgraduate & diploma courses in engineering, AMIE, AMIIM & AMMIICHE examinations.



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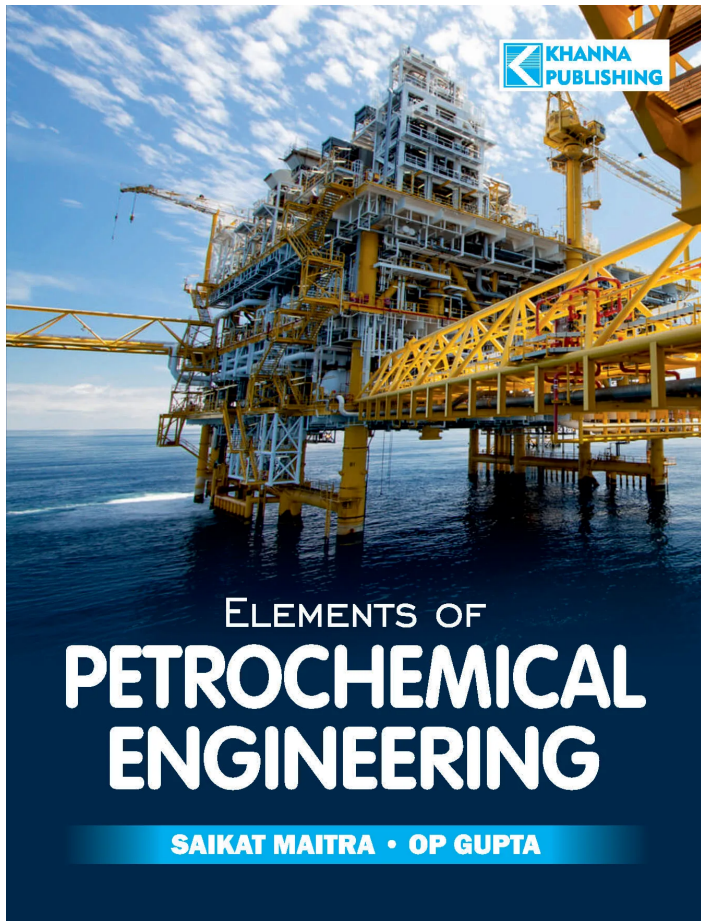
Table of Contents

- Chapter 1:** Introduction to Solid Waste Management.
- Chapter 2:** Municipal Solid Waste (MSW) Management.
- Chapter 3:** Industrial Solid Waste Management.
- Chapter 4:** Hazardous Waste Management.
- Chapter 5:** Radioactive Waste Management.
- Chapter 6:** Biomedical Waste (BMW) Management.
- Chapter 7:** E- Waste Management.
- Chapter 8:** Integrated Solid Waste Management.
- Chapter 9:** Short Q&A on Solid Waste Management (ISWM).
- Chapter 10:** Multiple Choice Q & A in Solid Waste Management.
- Chapter 11:** Glossary of Terms Related to Solid & Hazardous.
- References/Bibliography/Further Reading**
-

Author

Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Elements of Petrochemical Engineering

Author :	O.P. Gupta
ISBN 13 :	978-93-86173-36-2
ISBN 10 :	93-86173-36-0
E-ISBN 13 :	978-93-86173-36-2
Edition :	First
Pages :	424
Type of book :	Paperback
Weight (g) :	640.00
Year :	2020
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 425.00
Categories :	Chemical Engineering
Condition Type :	New
Country Origin :	India

Product Description

Elements of Petrochemical Engineering book is meant for the students, teachers and practicing Engineers. This book contains the manufacture, properties and applications of important petrochemicals. Important information's about feedstocks and applications of petrochemical derived products, status of Indian Petrochemical Industry and environment standards for the petrochemical plant are given in the appendices. It also contains short questions and answers and multiple choice questions and answers drawn from examination papers of various engineering colleges for the benefits of the students. The book is targeted to benefit the following : Diploma in Engineering Students, Degree in Engineering Students, AMIE AMIIM, AMIICHE students, Faculty members and teaching staff, Practicing Engineers/Professionals. Latest and updated information/ data/statistics pertaining to the subject matter has been included in the edition for the benefit of the readers.



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Chapter 1: Introduction to Petrochemicals. **Chapter 2:** Production of Methanol (Methyl Alcohol). **Chapter 3:** Production of Formaldehyde from Methanol(Methyl Alcohol). **Chapter 4:** Production of Chloromethanes by Direct Chlorination of Methane (CH_4). **Chapter 5:** Manufacture of Trichloroethylene (C_2HCl_3). **Chapter 6:** Manufacture of Perchloroethylene (C_2Cl_4). **Chapter 7:** Production of Ethylene ($\text{CH}_2 = \text{CH}_2$). **Chapter 8:** Manufacture of Ethylene Dichloride (EDC) and Vinyl Chloride Monomer (VCM). **Chapter 9:** Production of Ethylene Oxide (EO). **Chapter 10:** Manufacture of Ethanolamines. **Chapter 11:** Manufacture of Propylene (C_3H_6). **Chapter 12:** Production of Isopropanol (Iso-Propyl Alcohol) from Propylene. **Chapter 13:** Manufacture of Acetone by Dehydrogenation of Iso-Propanol. **Chapter 14:** Manufacture of Cumene (Isopropyl Benzene from Propylene). **Chapter 15:** Production from Acrylonitrile from Propylene. **Chapter 16:** Production of Isoprene from Propylene. **Chapter 17:** Manufacture of Epichlorohydrin and Propylene Oxide. **Chapter 18:** Production of Aldehydes, Alcohols, Carboxylic Acid by Oxy-Processing of Olefins. **Chapter 19:** Manufacture of Butadiene (C_4H_6). **Chapter 20:** Important Aromatic Compounds-Benzene, Toluene & Xylene (BTX). **Chapter 21:** Production of Benzene and Toluene. **Chapter 22:** Production of Benzene by Hydrodealkylation of Toluene. **Chapter 23:** Manufacture of Xylene. **Chapter 24:** Manufacture of Phenol from Cumene. **Chapter 25:** Manufacture of Phenol from Toluene Oxidation **Chapter 26:** Manufacture of Phenol from Hydrochlorination of Benzene. **Chapter 27:** Manufacture of Phenol from Chlorobenzene. **Chapter 28:** production of Styrene from Benzene. **Chapter 29:** Production of Phthalic Anhydride from Naphthalene or O-Xylene. **Chapter 30:** Production of Maleic Anhydride ($\text{C}_4\text{H}_2\text{O}_3$) from Benzene. **Chapter 31:** Production of Terephthalic Acid (TPA) & Dimethyl Terephthalate (DMT). **Chapter 32:** Production of Toluene Di-Isocyanate (TDI). **Chapter 33:** Fundamentals of Polymerisation Technology. **Chapter 34:** Polymer Processing Technologies.

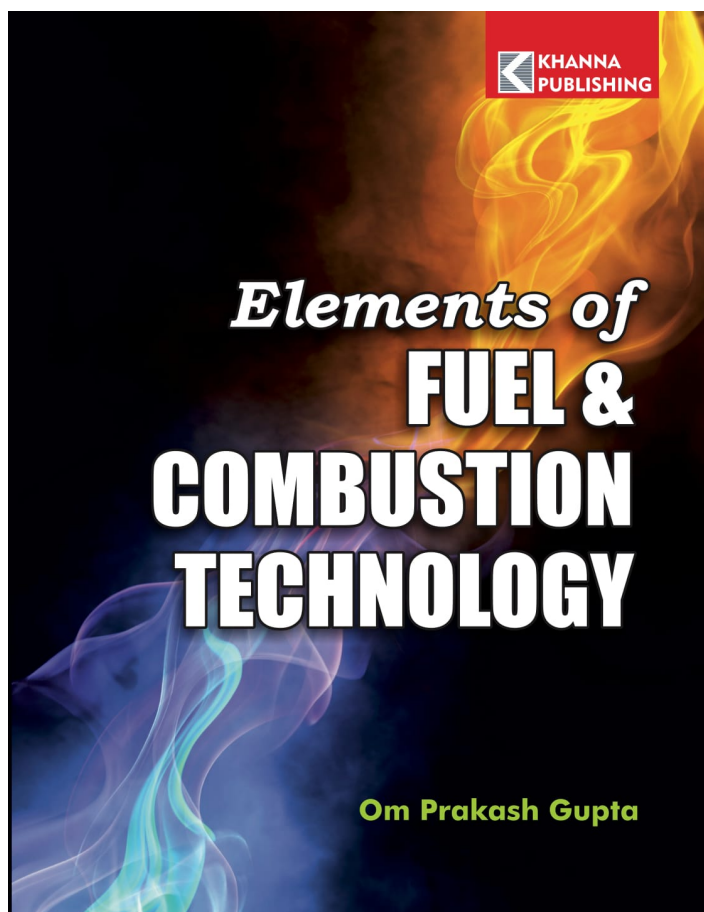
Appendix A: Petrochemicals Feedstocks, Products & Applications. **Appendix B:** Uses of Petrochemicals in Various Sectors. **Appendix C:** All About Indian Petrochemical Industry. **Appendix D:** Indian National Emission Standards for Petrochemical Plants. **Appendix E:** Glossary of Terms Related to Petrochemical Engineering. **Appendix F:** Bibliography/References/Further Reading. **Appendix G:** Objective Type Questions and Answers. **Appendix H:** Short Questions and Answers.



Authors

Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987. **Prof. Saikat Maitra** is presently working as the Vice Chancellor of Maulana Abul Kalam Azad University of Technology, West Bengal (formerly West Bengal University of Technology). He did his B.Sc. (Honors in Chemistry) from the Presidency Colleges, Kolkata, B. Tech, M. Tech and Ph. D in Chemical Technology from the University of Calcutta. He is a Chartered Chemical Engineer and Fellow of Institute of Engineers (India). Prof. Maitra earlier worked as Professor and Principal-in-Charge at Government College of Engineering; Ceramic Technology, Associate Professor at University Technology Petronas, Malasiya and as Scientist at Central Fuel Research Institute, Dhanbad. He has worked in industries too. Prof. Maitra published 150 research papers in different national & international journals, presented 60 papers in different conferences, filed two patents, authored three books and three book chapters. He has guided twelve Ph. D students, completed several funded research projects, organized several training program and workshops. He visited many countries like US, Australia, Italy, Malasiya, Singapore, Thailand, Bangladesh, Bahrain etc for delivering lecturers.





Elements of Fuel & Combustion Technology

Author :	O.P. Gupta
ISBN 13 :	978-93-86173-32-4
ISBN 10 :	93-86173-32-8
E-ISBN 13 :	978-93-86173-32-4
Edition :	First
Pages :	1168
Type of book :	Paperback
Weight (g) :	1520.00
Year :	2018
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 499.00
Categories :	Chemical Engineering
Condition Type :	New
Country Origin :	India

Product Description

This book contains detailed description of solid, liquid, gaseous fuels, combustion and furnaces. Beside short questions and answers and multiple choice questions & answers and multiple choice questions; answers drawn from the examination papers of various engineering Colleges and professional bodies examinations are also included. The book will be useful for degree & diploma curriculum of various branches of Engineering and for various associate membership examinations conducted by professional bodies like Institution of Engineers (AMIE), Indian Institute of Metals (AMIIM), Indian Institute of Chemical Engineers (AMIICHE), Institute of Chemicals etc.



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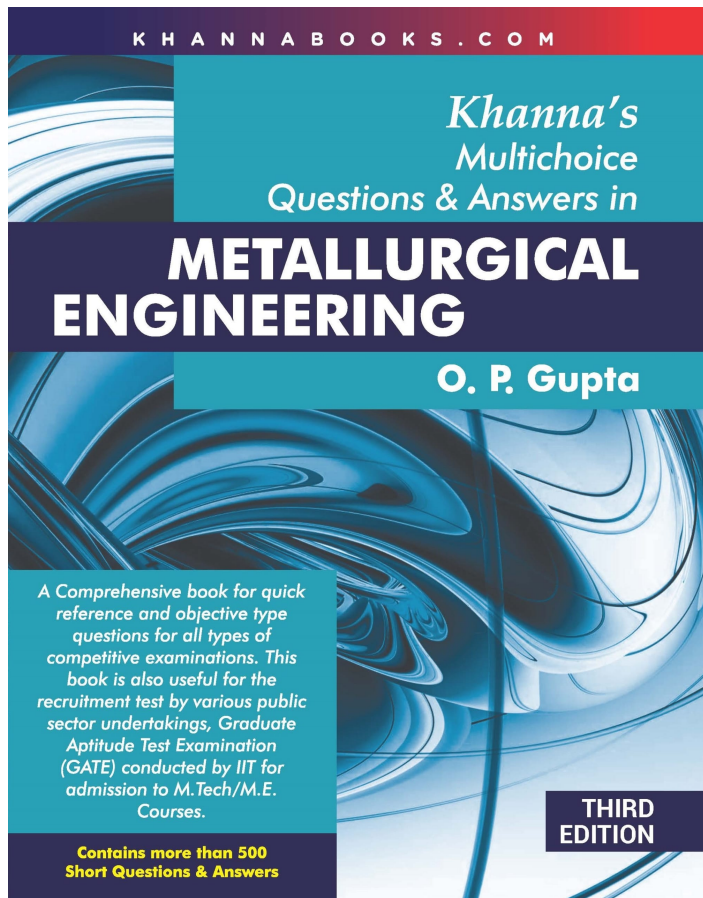
Chapter 1: Introduction and Classification of Fuels. **Chapter 2:** Definitions & units Conversions Related to Fuel Technology. **Chapter 3:** Wood, Charcoal and Peat. **Chapter 4:** Origin, Composition, Characteristics, and Significance of Constitution of Coal. **Chapter 5:** Petrography of Coal. **Chapter 6:** Washing of Coal. **Chapter 7:** The Storage of Coal-Oxidation & Spontaneous Combustion. **Chapter 8:** Pulverised Fuel/Coal. **Chapter 9:** Usage of Coal. **Chapter 10:** Comparative Study of Solid, Liquid and Gaseous Fuel. **Chapter 11:** Selection of Coal for Various Uses. **Chapter 12:** Mineral Matters in Coal-Ash and Clinker Formation. **Chapter 13:** Properties and Testing of Coal. **Chapter 14:** Classification of Coal. **Chapter 15:** Carbonization of Coal-Coke Making and By-Products Recovery. **Chapter 16:** Characteristics and Distribution of Indian Coal. **Chapter 17:** Origin, Composition, & Classification of Petroleum-Indian Crude Oil. **Chapter 18:** Crude of Distillation. **Chapter 19:** Thermal and Catalytic Cracking. **Chapter 20:** Thermal and Catalytic Reforming. **Chapter 21:** Polymerization, Alkylation and Isomerization. **Chapter 22:** Purification of Petroleum Products. **Chapter 23:** Properties of Petroleum Products. **Chapter 24:** Coal Tar Fuels (C.T.F). **Chapter 25:** Requisite of Good Quality Gasoline, Diesel, Fuel Oil and Other Petroleum Products. **Chapter 26:** Liquid Fuels from Coal by its Hydrogenation and Liquefaction. **Chapter 27:** Other Liquid Fuels-Benzol, Shale Oil, Alcohol and Colloidal Fuels. **Chapter 28:** Storage and Handling of Liquid Fuels/Fuel Oils. **Chapter 29:** Methane, Wood Gas, Gobar Gas, Sewage Gas and Gas from Underground . Gasification of Coal. **Chapter 30:** Natural Gas, Liquefied Petroleum Gas(LPG) and Refinery Gases. **Chapter 31:** Producer Gas and Water Gas. **Chapter 32:** Blast Furnace Gas, Coke Oven Gas and L.D Converter Gas-Steel Plant Fuels. **Chapter 33:** Coal Gas from Coal Gasification Processes. **Chapter 34:** Oil Gas from Oil Gasification Processes. **Chapter 35:** General Principles of Combustion. **Chapter 36:** Types of Combustion Processes. **Chapter 37:** Combustion of Solid Fuels Grate Firing and Pulverised Fuel Firing System. **Chapter 38:** Burners for Liquid and Gaseous Fuels Combustion. **Chapter 39:** Combustion Calculations. **Chapter 40:** Gas Analysis & Calorific Value Determination. **Chapter 41:** Fluidised Bed Combustion. **Chapter 42:** Introduction of Furnaces. **Chapter 43:** Waste Heat Recovery and Fuel Economy in Furnaces. **Chapter 44:** Control of Furnace Atmosphere. **Chapter 45:** Classification of Furnaces. **Chapter 46:** Fuels & Furnaces in Steel Plants. **Chapter 47:** Furnace Heat Balance Calculations. **Chapter 48:** Briquetting of Solid Fuels/Coal. **Chapter 49:** Gas Cleaning and Purification. **Chapter 50:** Rocket Fuels. **Chapter 51:** Thermal Insulation. **Chapter 52:** Properties and Efficient Utilization of Steam. **Chapter 53:** Electric Furnaces. **Chapter 54:** Refractories. **Chapter 55:** Appendix-A: Technical Data on Fuels. **Chapter 56:** Appendix-B: Short Questions and Answers on Fuel Technology. **Chapter 57:** Appendix-C: Multi-Choice Questions and Answers Fuel and Combustion Technology. **Chapter 1:** Appendix-D: Glossary of terms related to Fuels and Combustion Technology.



Author

Om Prakash Gupta is basically being a chemical engineer, he has a practicing experience of efficient Energy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T Kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited England and France on a study tour sponsored by United Nations Development Program (UNDP) to study the scope of energy conservation in steel plants in 1987.





Khanna's Multichoice Questions & Answers in Metallurgical Engineering

Author :	O.P. Gupta
ISBN 13 :	978-93-86173-11-9
ISBN 10 :	93-86173-11-5
E-ISBN 13 :	978-93-86173-11-9
Edition :	3
Pages :	1122
Type of book :	Paperback
Weight (g) :	1480.00
Year :	2023
Language :	English
Publisher :	Khanna Publishing House
M.R.P :	Rs 499.00
Categories :	Metallurgical Engineering, OBJECTIVE TYPE BOOKS
Condition Type :	New
Country Origin :	India

Product Description

This book is meant for diploma & degree student of metallurgical engineering for their academic programs as well as for various competitive examination for securing jobs. This book has been structured in three section. First section contains multiple choice type questions of various subjects of metallurgical engineering. Second section contains chapter wise question of GATE (Graduate Aptitude Test in Engineering) from 1991 to 2016. Third section contains SHORT QUESTIONS & ANSWERS in METALLURGICAL ENGINEERING. Fourth section contains APPENDICES containing Glossary of terms related to Metallurgical Engineering and Q&A of GATE-2017. This book has been designed to serve as "Hand Book of Metallurgical Engineering" which will be useful for various competitive examinations for recruitment in various public sector & Private Sector companies as well as for GATE Examination. Question have been arranged



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Section A - MCQ of Metallurgical Engineering

- Chapter 1:** General Metallurgy.
- Chapter 2:** Mineral Dressing.
- Chapter 3:** Iron Making.
- Chapter 4:** Steel Making.
- Chapter 5:** Extractive Metallurgy (Non-Ferrous).
- Chapter 6:** Mechanical Metallurgy.
- Chapter 7:** Physical Metallurgy.
- Chapter 8:** Materials Science.
- Chapter 9:** Fuel Technology.
- Chapter 10:** Furnace Technology.
- Chapter 11:** Refractory Technology.
- Chapter 12:** Foundry Metallurgy.
- Chapter 13:** Welding Metallurgy.
- Chapter 14:** Metallurgy of Nuclear Metals.
- Chapter 15:** Electrometallurgy and Corrosion.
- Chapter 16:** Metallurgical Testing & Inspection.
- Chapter 17:** Metallurgical Analysis.
- Chapter 18:** Physics of Metals.
- Chapter 19:** Metallurgical Thermodynamics.
- Chapter 20:** Metallurgical Kinetics.
- Chapter 21:** Miscellaneous Questions.

Section B - MCQ of GATE (Graduate Aptitude Test in Engineering)

- Chapter 22:** General Metallurgy.
- Chapter 23:** Mineral Dressing.
- Chapter 24:** Iron Making.
- Chapter 25:** Steel Making.



Author

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