

CBS Confident Pharmacy Series

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CBS Confident Pharmacy Series

Fourth Edition

Fourth
Edition

Biochemistry and Clinical Pathology

Course Code: ER20-23T

for Second Year Diploma in Pharmacy

is strictly written according to the new syllabus framed by Pharmacy Council of India (PCI) as per ER-2020. This book is presented and published to meet the requirements of students of second year Diploma in Pharmacy (DPharm). The book, written in a simple and lucid language, attempts to demystify and simplify the basic concepts for the students of pharmacy for proper understanding of the subject and to get a sure success in the State Board Examinations.

Salient features of the book :

- All topics are described in an easy to understand language.
- Gives to-the-point answers.
- Covers all the requisite contents as per new syllabus.
- Shows success key in Board Examination.

This book, as well as **CBS Confident Pharmacy Series**, will be useful not only for the students and teachers but also for candidates desiring to attempt competitive examinations for job opportunities in pharmacy profession such as hospital pharmacists in PHCs, civil hospitals, etc.

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He is recipient of 'Best Participation Award' at national level IAPST conference held in 2011. Since 2008, he has been writing books in the field of pharmacy: So far he has published 11 popular titles, each title going to the third edition.

Now, as per PCI's new syllabus (ER-2020), he is in the process of completing fourth edition of 6 titles and bringing out fresh edition of 5 new titles according to the recent subjects introduced in the syllabus.

Biochemistry and Clinical Pathology

Raje

Biochemistry and Clinical Pathology

Course Code: ER20-23T

for Second Year Diploma in Pharmacy

As per new syllabus prescribed by Pharmacy Council of India



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Salient Features

- Lucid and easy language
- To the point answers
- Remembering the facts in the simplest way
- Infusing confidence in the reader to appear in the board examinations

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Preface to the Fourth Edition

This edition of the book **Biochemistry and Clinical Pathology** builds self-confidence in students which will help them to get success in the examinations. The book has been written to meet the requirements of students of diploma in pharmacy (D Pharm) in accordance with the new revised syllabus ER2020 prescribed by Pharmacy Council of India.

This book is small and a humble effort has been put in for compiling necessary information on the subject. An attempt has been made to demystify and simplify the basic concepts for the students of pharmacy and to enable them get an evergreen success in MSBTE examinations.

The salient features of the present book are:

- Lucid and easy language
- To the point answers
- Remembering facts in the simplest way
- Infusing confidence in the reader to appear in the board examinations.

Hence, the series is named

CBS Confident Pharmacy Series

I am confident that this book will be useful to both the students and the teachers of diploma in pharmacy as well as the candidates desiring to succeed in competitive examinations for better job opportunities in pharmacy profession such as hospital pharmacists in PHCs, civil hospitals, etc.

Raje Vijay N

to
my beloved family

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I express my heartfelt thanks to Prof Madan Jagtap, Chairman, Gourishankar Education Society, Satara, Maharashtra, for consistent encouragement and inspiration for writing this book.

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I am also thankful to Shri Satish Kumar Jain, Chairman and Managing Director, and Shri Shantanu Sarkar, General Manager, Mumbai Branch, CBS Publishers & Distributors Pvt Ltd, for their sustained efforts and keen interest in the publication of this book.

I wish all my beloved students to have a great success in the board examinations.

Raje Vijay N

Syllabus

(As per PCI New ER 2020)

Biochemistry and Clinical Pathology

Course Code: ER20-23T

1. **Introduction to biochemistry:** Scope of biochemistry in pharmacy; cell and its biochemical organization
2. **Carbohydrates**
 - Definition, classification with examples, chemical properties
 - Monosaccharides—structure of glucose, fructose and galactose
 - Disaccharides—structure of maltose, lactose and sucrose
 - Polysaccharides—chemical nature of starch and glycogen
 - Qualitative tests and biological role of carbohydrates
3. **Proteins**
 - Definition, classification of proteins based on composition and solubility with examples
 - Definition, classification of amino acids based on chemical nature and nutritional requirements with examples
 - Structure of proteins (four levels of organization of protein structure)
 - Qualitative tests and biological role of proteins and amino acids
 - Diseases related to malnutrition of proteins
4. **Lipids**
 - Definition, classification with examples
 - Structure and properties of triglycerides (oils and fats)
 - Fatty acid classification—based on chemical and nutritional requirements with examples
 - Structure and functions of cholesterol in the body
 - Lipoproteins—types, composition and functions in the body
 - Qualitative tests and functions of lipids
5. **Nucleic acids**
 - Definition, purine and pyrimidine bases
 - Components of nucleosides and nucleotides with examples
 - Structure of DNA (Watson and Crick model), RNA and their functions
6. **Enzymes**
 - Definition, properties and IUB and MB classification
 - Factors affecting enzyme activity
 - Mechanism of action of enzymes, enzyme inhibitors
 - Therapeutic and pharmaceutical importance of enzymes

7. **Vitamins**

- Definition and classification with examples
- Sources, chemical nature, functions, coenzyme form, recommended dietary requirements, deficiency diseases of fat-and water-soluble vitamins

8. **Metabolism** (study of cycle/pathways without chemical structures)

- Metabolism of carbohydrates: Glycolysis, TCA cycle and glycogen metabolism, regulation of blood glucose level. Diseases related to abnormal metabolism of carbohydrates
- Metabolism of lipids: Lipolysis, β -oxidation of fatty acid (palmitic acid), ketogenesis and ketolysis. Diseases related to abnormal metabolism of lipids such as ketoacidosis, fatty liver, hypercholesterolemia
- Metabolism of amino acids (proteins): General reactions of amino acids and its significance—transamination, deamination, Urea cycle and decarboxylation. Diseases related to abnormal metabolism of amino acids, disorders of ammonia metabolism, phenylketonuria, alkaptonuria and jaundice
- Biological oxidation: Electron transport chain and oxidative phosphorylation

9. **Minerals:** Types, functions, deficiency diseases, recommended dietary requirements

10. **Water and electrolytes**

- Distribution, functions of water in the body
- Water turnover and balance
- Electrolyte composition of the body fluids, Dietary intake of electrolyte and Electrolyte balance
- Dehydration, causes of dehydration and oral rehydration therapy

11. Introduction to biotechnology

12. **Organ function tests**

- Functions of kidney and routinely performed tests to assess the functions of kidney and their clinical significances
- Functions of liver and routinely performed tests to assess the functions of liver and their clinical significances
- Lipid profile tests and its clinical significances

13. **Introduction to pathology of blood and urine**

- Lymphocytes and platelets, their role in health and disease
- Erythrocytes—abnormal cells and their significance
- Normal and abnormal constituents of urine and their significance

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