

STELLA MARIS COLLEGE (AUTONOMOUS). CHENNAI-600 086.

B.Sc DEGREE: BRANCH IV- CHEMISTRY

SYLLABUS

(Effective from the Academic Year 2015-2016)

DRUGS AND DISEASES

CODE: 15CH/UI/DD23

CREDITS: 3

OBJECTIVES OF THE COURSE

- To give an overview of medicines in day to day life
- To enlighten students on the application of chemistry to keep good health

Unit 1

General Introduction to Drugs

- 1.1 Definitions: Pharmacy, Pharmacology, Pharmacodynamics, Pharmacokinetics, Antimetabolites, Bacteria, Virus, Fungi, Mutation, Pharmacognosy, Toxicology, Pharmacotherapeutics, Chemotherapy, Therapeutic Index
- 1.2 Classification of Drugs-Biological, Chemical and Commercial Classification, Prescribed Drugs and over - the Counter-Drugs. Side Effects and Contra Indications

Unit 2

Common Diseases and their Treatment by Drugs

- 2.1 Some Common Diseases: Insect Borne – Malaria; Air Borne Diseases - Whooping Cough, Measles, Common Cold and TB; Waterborne Diseases - Cholera, Typhoid, Dysentery - Etiology, Symptoms, Prevention and Remedy
- 2.2 Some Common Disorders of the Digestive System – Jaundice; Respiratory System- Asthma; Nervous System - Epilepsy - Prevention and Treatment
- 2.3 Aids – Causes, Prevention and Treatment

Unit 3

Blood and Hematological agents

- 3.1 Blood Pressure, Hypertension - Cause, Prevention and Treatment, Antihypertensive Agents – Aldomet and Reserpine
- 3.2 Clotting of Blood - Mechanism, Haematological Agents, Anaemia – Causes and Control, Antianaemic Drugs
- 3.3 Cardiovascular Diseases - Cardiac Glycosides - Digoxin Antiarrhythmic Drugs - Quinidine - Dosage and Therapeutic uses, Calcium Blockers

Unit 4

Drugs of Importance – I

- 4.1 Anesthetics: Types - General – Nitrous Oxide, Ether, CHCl₃, Halothane; Local - Cocaine, Intravenous - Advantages and Disadvantages

4.2 Antiseptics and Disinfectants - (Phenols, Chloramines, Bleaching Powder, Boric Acid, Iodine, Zinc Oxide, Dyes-Crystal Violet)

4.3 Analgesics, Anti Pyretic and Anti-Inflammatory Agents - Narcotic and Non-Narcotic Drugs – Morphine. Source, Activity and uses of Pethadine, Aspirin, Paracetamol, Phenyl Butazone and Ibuprofen

Unit 5

Drugs of Importance – II

5.1 Antibiotics - Classification - Therapeutic uses of Chloramphenicol, Penicillin - Streptomycin, Tetracyclines, Erythromycin, Amoxycillin, Ciproflaxin

5.2 Antidepressants - Sedatives and Hypnotics - (Barbiturates); Hypoglycemic Drugs: Types of Diabetes, Hypoglycemic Agents, Sugar Substitutes

5.3 Antineoplastic Drugs - Types, Common Causes and Treatment of Cancer - Antineoplastic Agents; Antihistamines

TEXT BOOKS

Jayasree Ghosh. *A Text Book of Pharmaceutical Chemistry*. New Delhi: S.Chand, 2014.

Chatwal, G.R. *Pharmaceutical Chemistry* (Volume 1). New Delhi: Himalaya, 2006.

REFERENCE BOOKS

David A., Williams, Thomas L. Lemke. Foye's *Principles of Medicinal Chemistry*. Lippincott: Williams & Wilkins, 2005.

Graham Patrick. *An Introduction to Medicinal Chemistry*. Oxford University, 2001.

John H. Block, John M. Beale, Jr. *Organic Medicinal and Pharmaceutical Chemistry*. Lippincott: Williams & Wilkins, 2004.

WEB RESOURCES

http://www.rightdiagnosis.com/medical/hematologic_agent.htm

<http://www.drugs.com/forum/alternative-medicine/importance-drugs-29012.html>

End Semester Examination:

Total Marks: 100

Duration: 3 hours

Section A – 30 x 1 = 30 Marks (All questions to be answered) Multiple choice - 10, Fill in the Blanks - 10, T/F or Match the following - 5, single line answer - 5

Section B – 5 x 6 = 30 Marks (5 out of 7 to be answered)

Section C – 2 x 20 = 40 Marks (2 out of 3 to be answered)

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SYLLABUS

(Effective from the academic year 2015-2016)

INDUSTRIAL CHEMISTRY

CODE : 15CH/UI/IC23

CREDITS: 3

OBJECTIVES OF THE COURSE

- To enable an understanding of the process of development, optimization and monitoring of fundamental chemical processes in industries
- To study the generation of energy from various sources

Unit 1

Fuels and Combustion

- 1.1 Introduction - Classification of Fuels -Characteristics of a Good Fuel. Calorific Value, Theoretical Calculation Value of a Fuel-Solid Fuels-Wood
- 1.2 Coal - Classification of Coal, Analysis of Coal and Its Significance
- 1.3 Liquid Fuels: Petroleum - Cracking - Advantages of Catalytic Cracking Over Thermal Cracking - Synthetic Petrol

Unit 2

Industrial Waste and Treatment Process

- 2.1 Types of Industrial Waste, Treatment of Disposal of Industrial Waste or Effluent with Organic and Inorganic Impurities.
- 2.2 Characterization of Waste Water by Physical and Chemical Characteristics
- 2.3 Primary Treatment - Sedimentation, Neutralization, Coagulation, Equalization, Grid Removal Secondary Treatment: Aerobic Treatment, Oxidation Ponds, Oxidation Ditches, Trickling Filters, Activated Sludge Process, Aerated Lagoons, Anaerobic Treatment Tertiary Treatment: Reverse Osmosis, Electro Dialysis, Desalination
- 2.4 Industrial Effluents: Characteristics and Treatment Options for Effluents from Various Industries: Textiles and Dyes, Paper and Pulp, Leather, Food and Dairy, Fertilizers, Electroplating Industries, Distilleries
- 2.5 Sewage Treatment
- 2.6 Water Conservation, Recycling of Waste Water and Rain Water Harvesting

Unit 3

Synthetic Polymers

- 3.1 Requirement of a Fibre, Difference between Natural Fiber and Synthetic Fiber, Properties
- 3.2 Applications Of Synthetic Fiber – Nitro Cellulose, Rayon, Cuprammonium Acetate , Rayon, Viscose Rayon, Nylon 66 and Terylene.
- 3.3 Different Types of Plastics, Recycling of Plastics

Unit 4

Oils, Fats, Waxes and Soaps

- 4.1 Distinction between Oils and Fats. Classification and Properties of Animal Fats and Oils. Difference Between Animal, Vegetable and Mineral Oil, Essential Oils and Classification of Waxes
- 4.2 Soaps and Detergents- Classification, Cleansing Action of Soaps and Detergents. Enzymatic Detergents, Non-Degradable and Bio Degradable Detergents

Unit 5

Papers and Dyes

- 5.1 Types of Paper- Paper Stability, Environmental Impact of Paper, Applications of Paper- Thickness, Weight and Size of Paper
- 5.2 Classification of Dyes, General Methods of Applications of Dyes on Fibre
- 5.3 Dyes as Food Colours- Yellow Aniline Dyes, Metanil Yellow, Beta-Oxalyl-Amino Alanine and Lead Chromate

TEXT BOOKS

Gem Mathew G.D. *Chemistry in Everyday Life*. Jalandhar-Delhi: Vishal, 2009.

Sharma B. K. *Industrial Chemistry*. Meerut: GOEL, 2013.

REFERENCE BOOKS

Norris Shreve, R and Joseph A. Brink, Jr. *Chemical Process Industries*. Kogakusha: Mc Graw Hill, 2002.

Jain, P. C and Jain M. *Engineering Chemistry*. Delhi: Dhanpat Rai, 2001.

WEB RESOURCES

<http://www.ignou.ac.in/upload/unit-3.pdf>

<http://www.epa.gov/waste/nonhaz/industrial/guide/index.htm>

<http://www.epa.gov/osw/conserve/materials/plastics.htm>

PATTERN OF EVALUATION

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