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MBA Chemical Sales & Marketing Management, Choice Based Credit System-2020-22
Course Structure and Scheme of Examination

Semester	Course Code	Title of Paper(s)		Course Type	Credit					
					L	T	P	Total	Marks	
FIRST	CSM-101	Management Concepts & Processes		Core	3	0	0	3	100	
	CSM-102	Management Accounting		Core	3	0	0	3	100	
	CSM-103	Marketing Management		Core	3	0	0	3	100	
	CSM-104	Analytical Chemistry		Core	3	0	0	3	100	
	CSM-105	Major Elective	A.Pesticide Chemistry		Elective	3	0	0	3	100
			B.Bio-Chemicals		Elective					
	CSM-106	Major Elective	A.Paints & Pigments		Elective	3	0	0	3	100
			B.Anatomy & Physiology		Elective					
	CSM-107	Seminar		AE & SD	0	0	0	1	100	
	CSM-108	Assignment (Personality development/Yoga/ Language/Environment/Physical Education)		AE & SD	0	0	0	1	100	
Total Valid Credits								20		
CSM-109	Comprehensive viva-voce		Virtual credit				4	100		
Total Credits for First Semester(Valid Credits + Virtual Credits)								24	900	
SECOND	CSM-201	Marketing Research & Analytical Techniques		Core	3	0	0	3	100	
	CSM-202	Financial Management		Core	3	0	0	3	100	
	CSM-203	Business Environment		Core	3	0	0	3	100	
	CSM-204	Major Elective	A. Chemistry of Natural Products		Elective	3	0	0	3	100
			B. Medicinal Chemistry-I		Elective					
	CSM-205	Major Elective	A. Unit Operations		Elective	3	0	0	3	100
			B. Microbiology		Elective					
	CSM-206	Major Elective	A. Polymer Science-I		Elective	3	0	0	3	100
			B. Pharmaceuticals		Elective					
	CSM-207	Seminar		AE & SD	0	0	0	1	100	
CSM-208	Assignment (Personality development/Yoga/ Language/Environment/Physical Education)		AE & SD	0	0	0	1	100		
Total Valid Credits								20		
CSM-209	Comprehensive viva-voce		Virtual credit				4	100		
Total Credits for Second Semester(Valid Credits + Virtual Credits)								24	900	



Semester	Course Code	Title of Paper(s)		Course Type	Credit				
					L	T	P	Total	Marks
THIRD	CSM-301	Organizational Behaviour		Core	3	0	0	3	100
	CSM-302	Advertising Management		Core	3	0	0	3	100
	CSM-303	Sales & Distribution Management		Core	3	0	0	3	100
	CSM-304	Spectroscopy		Core	3	0	0	3	100
	CSM-305	Major Elective	A. Polymer Science-II	Elective	3	0	0	3	100
			B. Medicinal Chemistry-II	Elective					
	CSM-306	Project Viva-voce		Core	0	0	3	3	100
	CSM-307	Seminar		AE & SD	0	0	0	1	100
	CSM-308	Assignment (Personality development/Yoga/ Language/Environment/Physical Education)		AE & SD	0	0	0	1	100
		Total Valid Credits						20	
	CSM-309	Comprehensive viva-voce		Virtual credit				4	100
		Total Credits for Third Semester(Valid Credits + Virtual Credits)						24	900
FOURTH	CSM-401	Business Law		Core	3	0	0	3	100
	CSM-402	Business Policy & Strategic Analysis		Core	3	0	0	3	100
	CSM-403	International Marketing		Core	3	0	0	3	100
	CSM-404	Major Elective	A. Petrochemicals, Oils & Soaps	Elective	3	0	0	3	100
			B. Medicinal Chemistry-III	Elective					
	CSM-405	Major Elective	A. Industrial Chemicals	Elective	3	0	0	3	100
			B. Clinical Pathology & Diagnostic Techniques	Elective					
	CSM-406	Industrial Training & Project Viva		Core	0	0	3	3	100
	CSM-407	Seminar		AE & SD	0	0	0	1	100
	CSM-408	Assignment (Personality development/Yoga/ Language/Environment/Physical Education)		AE & SD	0	0	0	1	100
		Total Valid Credits						20	
	CSM-409	Comprehensive viva-voce		Virtual credit				4	100
		Total Credits for Fourth Semester(Valid Credits + Virtual Credits)						24	900
		Total Credits for the Course (20X4=80) + (4X4=16)						96	

Minimum Number of the Credits to be earned for the award of Degree=96

*Elective courses shall be conducted as per availability of permanent faculty

*AE & SD- Ability Enhancement and Skill Development

CSM 101

MANAGEMENT CONCEPTS AND PROCESSES

- Unit - I** **Introduction** – Concept of Management and its significance, Management Process, Management Roles, Management level and Management skills, Functional Areas of Management. Trends in professionalization of Management in India.
Evolution of Management Theory – Classical School, Scientific Management School, Human Relations School, Behavioral School.
Approaches to Management – Commodity, Paternalistic, Behavioral, Process, Systems and Contingency.
- Unit – II** **Planning** – Concept, Process, Types and Significance, Types of Plan, Objective Setting : Concept, Types and Process of Setting Objectives; M.B.O. : Concept, Process and Managerial Implications, Decision Making : Concept, Process, Types and Techniques of decision making.
- Unit – III** **Organizing** – Nature Principles, Process and significance of organizing, concepts in organizing : Line and Staff authority, Departmentation, Span of Management, Centralization and Decentralization Principles of Organizational Designing, Types of Organizational Structures.
- Unit – IV** **Directing** – Concept, Nature, Scope, Principles of Direction, Leadership Styles Motivation Concepts and Implications Communication Concepts, Process, Barriers to Communication and Building an effective system of Communication, Media and Channels of communication.
- Unit – V** **Coordinating and Controlling : Coordination** – Nature, Scope and Techniques of Coordination. Nature, process and aspect of control , types, areas of exercising control, Major Control System, and their designing, Modern Techniques of Control.

Note : Cases and Presentation should be discussed and organized in each unit, and cases should be asked in the semester examinations.

Suggested Reading :

1. KooutzO'Donnel&Weilrich : Elements of Management
2. Newmann&Summer : Process of Management
3. R.D.Agrawal : Organisation and Management
4. Peter Drucker : Practice of Management
5. L.M.Prasad : Principle of Management
6. C.B.Gupta : Principle and Practices of Management.

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Unit - I **Management Accounting** – Meaning, Nature, Scope and Functions of Management Accounting. Relationship between Financial Accounting, Cost Accounting and Management Accounting, Role and Responsibility of Management Accountant.

Accounting Records and System – Journal, Ledger and Preparation of Trial Balance and Final Account (Basic Problem only).

Unit – II **Accounting and Major Cost Concepts** – Concepts and classification of cost, Methods and Techniques of Costing, Managerial Costing and Break even Analysis, Standard Costing and Various Analysis – Computation of Material and Labour variance only.

Unit – III **Analysis & Interpretation of Financial Statements** – Financial Analysis, Types of Financial Analysis, Preparation of comparative Balance sheet, Preparation of comparative Income Statement. Ratio Analysis – Capital Structure Ratio, Profitability Ratio, Turnover Ratio, Long term and Short term Solvency Ratio.

Unit – IV **Statement of Change in Financial Statement –**

Fund Flow Analysis – Meaning and Concept of Funds and Fund flow, Significance, Importance and Limitation of Fund Flow Statement.

Cash Flow Analysis – Comparison between fund flow statement and cash flow statement, Significance and time taken of cash flow statement, Preparation of cash flow statement.

Format of Companies Balance sheet – (No Numerical Questions).

Unit – V **Budgeting and Budgetary Control** – Meaning Objective and Characteristics of Budgetary Control, Advantages and Limitation of Budgetary Control, Preparation of Sales Budget, Performance Budgeting, Concept of Management Audit and Responsibility Accounting.

Suggested Reading :

1. Robert Anthony : Management Accounting.
2. Khan & Jain : Management Accounting.
3. Horn Gren Charles T : Introduction to Management Accounting.
4. Hingo Rani, Ramnattan : Management Accounting.
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profitability, strategies for improving customer retention, six sigma's of relationship marketing, CRM implementation.

Suggested Reading :

1. Philip Kotlar : Marketing Management (Millennium Edition)
2. Kotlar Armstrong : Principal of Marketing (9th Ed.)
3. Ramaswamy : Marketing Management
4. Sherlaker : Marketing Management
5. C.B.Mamoria : Marketing Management
6. RajanSaxena : Marketing Management
7. C.N.Sontakki : Marketing Management
8. Chhabra and Grover : Marketing Management
9. Govind Rajan : Marketing Management
10. Stanton : Fundamental of Marketing



UNIT- I

Data Analysis

Types of errors, propagation of errors, accuracy and precision, significant figures, least square analysis, average, standard deviation, t test, F test, Q test, standardization of analytical methods.

Titrimetric Methods of Analysis

General concept, stoichiometric calculations, acid-base titrations, acid-base indicators, complexometric titration, metal ion indicator, precipitation titrations, adsorption indicators.

UNIT – II

Gravimetric Methods of Analysis

Principles of gravimetric analysis, formation and properties of precipitates, applications of gravimetric analysis

Solvent Extraction

Theoretical principle, classification, factors favoring extraction, extraction equilibrium, instrumentation and application.

UNIT – III

Ion Exchange Chromatography

Theories, use of synthetic ion exchangers in separation, chelating ion exchange resins, liquid ion exchangers, experimental techniques and applications.

Separation Techniques

Classification of chromatographic techniques, fundamentals of paper, thin layer, column and electrophoresis, ion chromatographic techniques. Application of these techniques in qualitative and quantitative analysis.

UNIT – IV

Gas Chromatography

Principles, instrumentation and application of GSC and GLC, on line GC/Mass and GC/IR analysis.

HPLC

Principles, instrumentation and role of HPLC in qualitative and quantitative analysis, comparison of GC and HPLC. Application of LC/MS in analysis.

UNIT – V

Nephelometry and Turbidimetry

Introduction, general principles, instrumentation and application.

Flame photometry

Introduction, instrumentation, interferences and factors affecting flame photometry.

Atomic Absorption Spectroscopy

Theory of atomic absorption spectroscopy, instrumentation, application in quantitative analysis. ICP-AAS.

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CSM 105 (A) PESTICIDE CHEMISTRY

UNIT - I

Classification of Pesticides structure, synthesis, mode of action, application & environmental impact of following:

Insecticide of Plant Origin: Nicotine, Pyrethroids, Allthrin.

Fungicides: Dichlone, Captan

UNIT - II

Structure, synthesis, mode of action, application, SAR & environmental impact of following:

Chlorinated hydrocarbon: BHC, heptachlor, aldrin, dieldrin, endosulfur,

UNIT - III

Structure, synthesis, mode of action, application & environmental impact of following:

Organo Phosphorous insecticides: Dichlorovos, Paraoxon, SAR in the class

Dithio phosphoric acid derivatives: Malathion,

Thio phosphoric acid: Parathion, Demetron, Chlorthion etc.

Pyrophosphoric acid derivative: TEPP

UNIT - IV

Structure, synthesis, mode of action, application & environmental impact of following:

Carbonate insecticides: Carbaryl, Baygon

Rhodenticide : Zinc Phosphide, Warfarin, Fluoroacetamide.

UNIT - V

Formulation of Pesticides

Dry formulations: Dusts, granules, we table powders, seed disinfectant.

Liquid formulation: Emulsions, suspensions, aerosols and sprays.

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CSM 105 (B)

BIO-CHEMICALS

UNIT – I**Carbohydrates**

monosaccharide, Disaccharide and polysaccharide.

Cyclic structure of glucose, Glycolysis, TCA cycle & its regulation & oxidation of pyruvate to acetyl CoA

phosphogluconate (HMS) pathway, Gluconeogenesis and its regulation.

Disorders of carbohydrate metabolism.

UNIT – II**Proteins**

Classification, structure & separation Biosynthesis of protein:

Structure, importance & biosynthesis of essential and nonessential amino acids.

Transamination & oxidative deamination of amino acids.

UNIT – III

Introduction and Classification of Enzymes

mechanism of enzyme – substrate complex

Factors governing enzyme activity & Isozymes & inhibition of enzymes

UNIT – IV

Introduction & classification of lipids.

Biosynthesis & oxidation of fatty acids including β -oxidation.

Disorders of lipid metabolism.

UNIT - V

Introduction, classification of hormones.

Hormone receptors & intracellular messengers.

Hormones of thyroid, adrenal, gonads & pituitary.




CSM 106 (A) PAINTS AND PIGMENTS**UNIT – I****Pigments**

General characteristics of pigments, Types of pigments, Blue pigments, Red pigments, Yellow pigments, Green pigments and Black pigments, General properties and methods of preparations of white pigments.

UNIT – II**Dyes**

Introduction, General characteristics colour and constitution, Basic operations in Dying Classification of dyes according to their mode of application and based on chemical constitution. commercial dyes viz. Azo dyes, stilbeneazo dyes, Basic dyes, Indigo dyes, Reactive dyes, Disperse dyes

UNIT – III**Printing Inks**

Introduction, properties and uses of printing inks, Raw materials used in printing inks, Types of printing inks, Lithographic, Gravure, Flexographic and Screen inks, General process of manufacture of printing inks.

UNIT – IV**Paints and Varnishes**

General characteristics of paint varnishes and lacquers, their function, manufacture and classification. General account of enamel, and emulsion paints water based paints & japans.

UNIT – V**Paint & Varnish Formulations**

Function of vehicle, solvent, thinner, pigment, dyes, filler, resins, drier, insecticides and additives in paint formulations.

Testing of formulations/paints

Viscosity, brush ability, color measurement, color matching, light fastness, opacity, drying time, adhesion, elasticity hardness, gloss, film thickness, wet and dry, fineness of grind, water resistance, humidity resistance, salt spray resistance, durability, weatherometers.




CSM-106 (B) ANATOMY & PHYSIOLOGY**UNIT – I****General:** Muscular, Skeleton, System Joints and Glands**Introduction:** Terminology and architectures of Human body.**Cell –** Basic structure of Cytoplasm, cellulose (Chromosomes and genes) and cell membrane, with their function.**Tissues:** Classification, differences and function.**Mussels:** Classification, differences and functions, Mechanism of muscular contraction**Skeleton:** Bones and cartilage, types and function, Nomenclature of human bones**Joints:** Type and movements, Nomenclature of various joints.**Glands:** Endocrine glands, names, location, hormones and functions.**UNIT – II****Nervous system and Special sense organs:** Basic structure of nervous system. Types of neurons classification of nervous system.**Brain:** Parts and their functions and CSF.**Spinal chord:** Structure and functions.**Cranial nerves:** Name function, An idea of spinal nerves.**Autonomic nervous system:** Sympathetic and parasympathetic nervous system and their functions.**Eye:** Structure and vision.**Ear:** Structure, hearing and balance.**Skin; Tongue :** structure and function.**UNIT – III****Blood:** Composition and function, blood coagulation, immunity, Basic plan of circulatory system.**Heart:** Structure and Physiology**Arterial System:** Major arteries, Blood pressure, Venous system.**Lymph:** Lymphatic organs and circulation of lymph.**UNIT - IV****Respiratory system:** Basic plan, Respiratory passage, Functions of Respiration**Mechanism of Breathing,** Pleural cavity, intrapleural pressure

Lung, Trachea and Larynx, Bronchial asthma

Digestive Systems:**Digestive system:** Basic plan, Parts of alimentary, canal and function.**Digestive glands:** Liver, Pan crease: Structure and functions.**Food:** Nutritional value, Vitamins.(Water soluble and fat soluble vitamins)

Mal nutrition (Marasmus and kwashiorkor)

UNIT – V**Urinary and Genital Systems:****Excretory System:** Parts, function and urine formation.**Male genital system:** Parts and function.**Female genital system:** Parts and function.

Spermatogenesis and oogenesis

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CSM - 201 MARKETING RESEARCH AND ANALYTICAL TECHNIQUES

UNIT-I: Introduction to Marketing Research :

Marketing Research, Scope and Importance, Types of Marketing Research, Marketing Research Process, Ethical Issues in Marketing Research, Marketing Research in India.

UNIT-II : Research Process:

Research Design, Sampling Procedures and Problems, Methods and tools of Data Collection , Analysis and Interpretation of Data.

UNIT – III Measures of Central Tendency:

Concept and Computation of mean, mode and median, Standard deviation, Co-efficient of variation. Harmonic Mean, Geometric Mean.

UNIT – IV Correlation and Regression Analysis:

Uses of regression analysis, Regression lines, Regression by using method of least square, Simple, multiple and partial correlation.

UNIT – V: Tests and Hypothesis:

Concept of Chi-square test, Meaning and Uses of Chi-square measure, Test of significance, Large samples – Problems relating to test of significance of means, Test of significance of proportions. Test of significance of small samples, ‘t’ test for significance of means only.

Reference Books:

1. Business Mathematics by S.P. Gupta
2. Business Statistics by V.K. Kapoor & Sancheti

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- Unit - I** **Introduction** - Nature, objective and scope of Finance Function and Financial Management. Profit Maximization V/S Wealth Maximization, Financial Forecasting, Classes of securities and Equity Shares, Preference share, Debentures and Public Deposits and ROI Concept.
- Unit – II** **Capital Structure and Cost of Capital** – Meaning of Capitalisation, Capital structure and Finance Structure Theories of Capital Structure, Capitalisation, Over Capitalisation and Under Capitalisation, Leverages. **Cost of Capital** – Factor affecting Cost of Capital, Measurement of Cost of Capitals, Cost of Preference Share, Equity Share, Debentures and Retained Earning.
- Unit – III** **Management of Working Capital** – Meaning and Concept of making capital, Sources of working capital and factor affecting working capital, Management of cash ,Recurable Management and optimum Credit Policy, Management of Inventory.
- Unit – IV** **Capital Budgeting / Management of Fixed Capital-** Meaning nature and need for capital Budgeting. Technique of Capital Budgeting. Rule Analysis in Capital Budgeting, Estimating of Cost and Benefits of Capital Rationing.
- Unit – V** **Management of Earnings** - Dividend Decision and Dividend Policies, Types of Dividend Determinants of Dividend Policy and its impact on Stock price. Dividend Polices followed by Indian Industries, Bonus Issue – Meaning effects and objects of Bonus issue, Advantages and Disadvantages of Issue of Bonus share.

Note : One Practical Question may be asked from any Unit.

Suggested Reading :

1. S.N.Maheshwari : Financial Management
2. Khan & Jain : Financial Management
3. I.M.Pandey : Financial Management
4. Prasanna Chandra : Financial Management
5. S.C.Kuchhal : Financial Management
6. M.Shrivastava : Financial Decision making Problem and Cases.
7. Weston Brigham : Managerial Finance

CSM 203 BUSINESS ENVIRONMENT

Unit-I: Introduction:

Concept, Nature and Significance of business environment, Salient feature of Capitalism, Socialism, Mixed economy, Emergence of public sector, Public sector reforms, Emergence of private sector and Joint sector.

UNIT-II: Social Environment:

Social responsibilities of business, Consumerism, Ethics and Culture of business, SEBI, Indian Fiscal and Monetary Policy, Liberalization and Globalization, Foreign capital and technology, Import and Export policy, FEMA.

UNIT-III: Industrial Environment:

New industrial policy, Consumer Protection Act, Environment Protection Act, Competition Act 2004.

UNIT-IV : Demand and Production Analysis :

Law of demand, Factors affecting demand, Elasticity of demand, Techniques of forecasting demand - Survey and Statistical methods. Production function with one variable input, Law of variable proportions, Production function with two variable inputs, Isoquant production function with all variable inputs, Return to scale, Law of supply and Classification of cost.

UNIT-V: Market Structure and Pricing :

Different market structure, Price and output determination under perfect competition, Monopoly, Monopolistic competition, Oligopoly.



CSM – 204 (A) CHEMISTRY OF NATURAL PRODUCTS

Unit – I

Terpenoids and carotenoids : Classification, occurrence, isolation, general methods of structure determination, isoprene rule, stereo chemistry, biosynthesis. Synthesis and industrial uses of following representative molecule : citral, geraniol, Menthol, zingiberene, β -carotene.

Unit – II

Alkaloids : Definition, nomenclature and physiological action, occurrence, isolation, general methods of structure elucidation, degradation, classification based on nitrogen heterocyclic ring, role of alkaloid in plants, structure, stereo chemistry, synthesis and biosynthesis of the following; Conine, Nicotine, atropine, Quinine.

Unit – III

Perfumes : Constitution of perfumes, odorous substances, Extraction of perfumes from plants, synthesis of some important synthetic chemicals used in perfume industry coumarin, β -ionone, esters, phenylethyl alcohol, Musk ambrette, Musk Xylene, Haliotropin, perfume formulation, some representative formulation of rose, jasmine, sandal wood, Fancy perfumes, lavender etc.

Unit – IV

Carbohydrate and Fermentation Industries: Manufacture of sugar. Manufacture of starch, dextrin from corn, Potato, rice and tapioca.

Industrial alcohol, manufacture of absolute alcohol, Beer, Wine, Distilled spirit, Butyl alcohol, Acetone, Acetic acid, Citric acid, Lactic acid, Oxalic acid etc.

Unit – V

Milk and Milk Products:

Chemical Composition, Processing of milk, Types of milk, Analysis of Milk and Composition, uses and manufacturer of various milk products viz cream, butter, ghee, cheese, condensed milk, casein, khoa, milk powder, infant milk food, malted milk powder, ice-cream, fermented milk products.



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CSM 204 (B) MEDICINAL CHEMISTRY-I

UNIT-I

General Pharmacological Principles

- a) Drug nomenclature, routes of drug administration.
- b) **Pharmacokinetics:** Passive diffusion and filtration, specialized transport, absorption, bio-availability, distribution, bio transformation (metabolism), Excretion, clearance, plasma half life, loading and maintenance dose, prolongation of drug action.
- c) **Pharmacodynamics:** Principles of drug action, mechanism of drug action, drug response relationship, drug dosage, factors modifying drug action.

UNIT - II

Antipyretics analgesics

- a) **Some common antipyretic drug:** Classification, pharmacology, mode of action, adverse effects of paracetamol, acetanilide, aspirin, cincophen, phenazone
- b) **Opoid analgesic or Narcotic analgesic drugs:** Classification, pharmacology, mode of action, adverse effects of Morphenesulphate, levorphanon tartrate, pethidine hydrochloride.
- c) **Non steroidal anti inflammatory drugs:** Classification, pharmacology, mode of action, adverse effects of Indomethacine, Ibuprofen, Auranofin.

UNIT- III

- a) **Sulphonamides:** Classification, pharmacology, mode of action, adverse effects of Sulfanilamide, Sulfathiazole, Sulphadiazine, Sulfacetamide, Mafenide
- b) **Cotrimoxazole, Quinolones and Fluroquinolones:** Classification, pharmacology, mode of action, adverse effects of cotrimoxazole, ciprofloxacin, norfloxacin.
- c) **Anti Cancer Drugs:** Classification, pharmacology, mode of action, adverse effects of Cyclophosphamide, Melphalan, Busulfan, Methotrexate.

UNIT - IV

Antibiotics

- a) **β -Lactam antibiotics:** Classification, pharmacology, mode of action, adverse effects of Penicilline (Benzyl penicilline, amoxicillin, ampiciline) and Cephalosporins (cephalexin).
- b) **Aminoglycosides Antibiotics:** Classification, pharmacology, mode of action, adverse effects of Streptomycin and Neomycin.
- c) **Tetracyclines and chloramphenicol:** Classification, pharmacology, mode of action, adverse effects of Tetracycline and Chloramphenicol.

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- d) **Macrolide Antibiotics:** Classification, pharmacology, mode of action, adverse effects of Erythromycin.
- e) **Treatment of urinary tract infection:** Antimicrobial agents

UNIT -V

- a) **Antitubercular Drugs:** Classification, pharmacology, mode of action, adverse effects of Isoniazid and Streptomycin.
- b) **Antileprotic Drugs:** Classification, pharmacology, mode of action, adverse effects of Dapsone and Clofazimine
- c) **Antimalarial Drugs:** Classification, pharmacology, mode of action, adverse effects of Chloroquine and Primaquin Phosphate.
- d) **Antiamoebic & Antiprotozoal Drugs:** Classification, pharmacology, mode of action, adverse effects of Metronidazole, Diloxanide Furoate and Pentamidine.



CSM 205 (A) UNIT OPERATIONS

UNIT – I

Distillation

Introduction, Batch and continuous distillation, Reflux ratio, Azeotropic, Steam and extractive distillation.

Equipment: plate columns and packed columns.

Absorption

Introduction, Liquid gas equilibrium selection criteria for solvent minimum gas liquid ratio type of packing. Equipments – packed columns, spray columns, bubble columns, packed bubble columns, mechanically agitated contactors.

UNIT - II

Evaporation

Introduction; Equipments short tube (standard) evaporator, forced circulation evaporator, falling film evaporators, climbing film (upward flow) evaporators, wiped (agitated) film evaporators.

Heat Exchanger

Introduction; Equipments double pipe, Shell and tube, U-tube, Fine tube Heat exchanger

UNIT – III

Crystallization

Introduction : Solubility, super saturation, nucleation, crystal growth, Equipment – tank crystallizer, agitated crystallizer, evaporator crystallizer

Extraction

Introduction : selection of solvents, Equipments – spray column, packed column rotating disc column, mixer settler.

UNIT – IV

Filtration

Introduction, Filter media and filter aids, Equipment – Plate and frame filter press, rotatory drum filter, candle filter, bag filter, centrifuge filter.

Size Reduction and size Separation

Definition, objectives of size reduction, factors affecting size reduction, ball mill, hammer mill, fluid energy mill

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UNIT – V**Mixing**

Theory of mixing, solid – solid, solid-liquid and liquid – liquid mixing equipments

Drying

Introduction; free moisture, bound moisture, drying curve, Equipments – tray drier, rotary dryer, flash dryer and spray dryer.

B. Singh

J. K. Sankar

CSM-205(B)

MICROBIOLOGY

Unit – I

1. Introduction, History & Scope of Microbiology
2. Morphology, nutrition & reproduction of bacteria, Protozoa, virus & fungi.
3. Isolation & preservation of pure culture
4. Classification of bacteria

Unit – II

1. Growth factors of bacteria
2. Bacterial toxins
3. Identification of bacteria
4. Microbial Straining techniques

Unit – III

1. Principles of sterilization & Disinfections
2. Control of micro-organisms by physical & chemical method
3. Aseptic techniques & test for sterility
4. Method of evaluation of antimicrobial chemical agents

Unit – IV

1. Infection & factors influencing infection
2. Bacterial disease – Tuberculosis, Cholera, Typhoid, Diphtheria
3. Viral disease – Influenza, Infective hepatitis, Poliomyelitis
4. Protozoon disease – Malaria

Unit – V

1. Innate & Acquired immunity
2. Immurioglobulins – Structure, types & functions
3. Antigen – Antibody reactions
4. Production of Monoclonal antibodies & vaccines



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CSM 206 (A)**POLYMER SCIENCE – I****UNIT – I**

Concept of polymers, polymerization, definition, classification and types, Bonding in polymers.

Condensation polymerization – types extent of condensation and degree of polymerization. Cross-linking, gel point and ring opening polymerization.

Addition polymerization free radical & Ionic chain transfer and inhibition. Co-ordination polymerization Ziegler copolymerisation – mechanism of copolymers, block and graft copolymers. Kinetics of co-polymerisation.

UNIT – II**Chemical properties**

Hydrolysis, acidolysis, aminolysis, hydrogenation, addition, substitution isomerisation, cyclization and cross linking reactions of polymer.

Polymerization kinetics and Techniques

Free radical, cationic, anionic and radiation, polycondensation, mass, solution, emulsion and suspension polymerizations, Advantages and disadvantages of the techniques and of the products from them.

UNIT – III**Molecular mass**

Relative molecular mass, m_w , m_n and polydispersibility colligative property measurement and group analysis. Light scattering, ultra centrifugation, osmotic pressure and viscosity methods of molecular mass measurement. Gel permeation chromatography.

Glassy state, glass transition temperature, Mechanisms of glass transitions temperature, Factors influencing the glass transition temp, Relation of glass transitions temperature with molecular weight and melting point. Importance of glass transition temperature, crystallinity in polymers

UNIT – IV**Rubber**

Materials and Processing Technology

Introduction, types, thermoplastic elastomers (TPE), vulcanization of elastomers, theory and accelerator action of sulphur vulcanization, non-sulphur vulcanization, ebonite latex technology, some polymer industries in India.

Polymer degradation and stabilizers

Thermal degradation, photo degradation, Oxidative degradation, biological degradation, the role of antioxidants and stabilizers.

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UNIT – V

Plastics Materials

Introduction, Synthesis, properties and uses of following:

- | | |
|-------------------|------------------------|
| 1. Polyethylene | 6. Cellulose plastics |
| 2. Polystyrene | 7. Silicones |
| 3. Acrylic fibers | 8. Poly Vinyl Chloride |
| 4. Polyamides | 9. Polyurethane's |
| 5. Polycarbonates | |

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CSM 206 (B)

PHARMACEUTICS

UNIT – I

The design of dosage forms and Preformulation

- a) **Design of Dosages Forms:** Principles of dosage form design, biopharmaceuticals consideration in dosage form design, routes of drug administration, drugs factors in dosage form design, therapeutics consideration in dosage form design,
- b) **Preformulation:** Concept of preformulations, Uxorious aspects of preformulations, spectroscopy, solubility, melting point, powder flow properties, assay development.

UNIT – II

Physiochemical Principles of Pharmaceutics

- a) **Viscosity, Rheology and the flow of fluids :** Newtonian and Non-Newtonian fluids, viscosity values for Newtonian fluids, determination of the flow properties of simple fluids, types of non-Newtonian behaviour, determination of the flow properties of non-Newtonian fluids, the effects of rheological properties on bioavailability.
- b) **Solubility and dissolution rate:**Methods of expressing solubility, prediction of solubility, solubility of liquids in liquids, solids in solids, gases in liquids and solids in liquids, dissolution rate of solids in liquids, factors affecting dissolution rates, measurement of dissolution rates

UNIT – III

- a) **Disperse systems:** Colloids, Preparation of colloids, properties of colloids, physical stability of colloidal systems, gels, surface active agents, micellizations, solubilization, detergency.
- b) **Biopharmaceutics:** Concept of Bioavailability and Biopharmaceutics, factor influencing bioavailability, assessment of bioavailability, representation of bioavailability data, absolute and related bioavailability, one compartment open model of drug disposition in the body. Dosage regimens and their influence on the concentration, time profile of a drug in the body.

UNIT – IV

Study of Pharmaceutical Dosages Form Design Consideration

- a) **Tablets:** Types of tablets, tablets ingredients, diluents, binders, disintegrants, lubricants, colors, flavours, sweeteners, types of coating.
- b) **Tablet Standardization:** Hardness, friability, weight variations, disintegration, dissolution and content uniformity tests.
- c) **Capsules:** Hard geletins capsules – capsules size formulation and preparation of filled hard gelatins capsules, soft geletin capsules (soft gels) –Manufacturing procedures, quality control of capsules.

UNIT – V

- a) **Pharmaceutical Preparations:** Principles and procedures involved in the dispensing of following classes of pharmaceutical dosages form – solutions,

aromatic water, syrups, elixirs, spirits, tinctures, mixtures, lotions, liniments, throat paints.

- b) **Suspensions:** Introduction, flocculation and deflocculating, sedimentations parameters, role of wetting, suspension formulation, evaluation of suspension stability.
- c) **Emulsions:** Introduction, types, detection, thermodynamic consideration.

Unit - I **Introduction** – Organisation and Organisation Behaviour, Key Determinants of behaviour in Organisation, Goals, Element and focus of O.B. Historical Development of O.B. and Contributions of other disciplines to O.B. O.B. models and their implications.

Unit – II **Biological foundation of Human Behaviour.**
Personality : Concept, determinants, affect of personality on Behaviour, Personality traits, theories and test of Personality.
Learning : Definition, theories, Shaping and learning Curves.
Attitudes : Concept ,Characteristics functions, and formation of attitude; Measurement of attitudes, Cognitive Dissonance theory.
Perception : Concept, process and factors affecting it.
Motivation : Motives and Behaviour, theories of Motivation – Maslow’s theory, ERG Theory, Herzberg Motivation Theory, Vrooms Expectency.

Unit – III **Group Dynamics** – Concept, Characteristics types, Stages of Group Development, Group Behaviour models, Group Cohesiveness, Group norms, Group think and group shift.
Work Teams : Group Vs. teams, Types Creating high performance teams, Turning Individuals into team players.

Unit – IV **Organisational Power Structure and Leadership Patterns :-**
Power : Meaning and Types, Distinction between Power, Authority and influence, Contingency approaches to power.
Leadership : Meaning, traits of an effective leader, leadership behaviour, leadership styles, managerial grid, Fiedler’s Contingency Model.

Unit – V **Organisational Changes and Development :**
Organisational Changes : Definitions, Goals of OC, forces for change, Resistance to change, Overcoming Resistance and managing Organisational change.
Organisational Development : Concepts, values, techniques, Organisational Culture and climate, Organisational effectiveness, Management of Stress and conflict in Organisations.

Suggested Reading :
1. Luthans Fred : Organisational Behaviour
2. Davis, Keith : Human Behaviour at work
3. Prasad, L.M. : Organisation Theory and Behaviour
4. Robbins Stephen, P. : Organisation Behaviour
5. Katz and Kain : The Social Psychology of Organisations

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- Unit - I** **Promotional Communication** – Marketing communication, Process of Marketing Communication, Promotion as Communication, Growth of Promotion and Advertising, Noise in Communication, Elements of Promotion mix, Objective of Promotion communication, Factors influencing Promotion Mix.
- Unit - II** **Advertising World** – What is advertising? Role of Advertising, Reasons for Advertising, Advertising and Marketing Mix, Advertising as translation of product concept into customer benefits, as a information, as a tool of consumer welfare, Types of Advertising, Legal and Ethical issues in Advertising.
- Unit – III** **Advertising Decision** – Advertising Budget, Advertising Appeals, Media, Concept of media , Media Selection, Media Planning Process, Types of Media (Print Media, Electronic Media, Outdoor and Transit Media, Direct Marketing and Cinema), Ad-Effectiveness (DAGMAR Approach, Pre testing and Post testing all medias, Various approach).
- Unit - IV** **Advertising Effectiveness** - Advertising Effectiveness, Measuring Advertising Effectiveness, Productivity in Advertisements, Advertising Agencies, Advertising Art - the Layout of Advertising. Rural and Economic Concept of Advertising.
- Unit - V** **Branding** - Meaning of Branding, Strategic Relevance of Branding, Advantages and Limitation of Branding (Consumers and Marketer's Point of View), Brand Positioning, Components of Positioning, Positioning Strategy, Concept of Brand Extension, Rules and Risk of Brand Extensions, Measurement of Brand Equity, Categories of Brand Equity (Cost, Price and Consumer Base).

CSM – 303 SALES & DISTRIBUTION MANAGEMENT

Unit – I

Concept and objective of sales management; Designing of sales force, objective and requirement of sales force. Sales force structure and size.

Unit– II

Sales organization, types of sales organization Recruitment, selection, training types, motivation, compensation and performance evaluation.

Unit – III

Personal selling (definition, Role, importance), types of personal selling, steps of personal selling, handling objections, qualities of successful sales man. DSR – Daily sales reports.

Unit– IV

Meaning, Nature and structures of distribution channel; functions and flows in channels; Types of channels; Channel Management, Relationships and competitive dynamics. Role and functions of marketing intermediaries.

Unit – V

Logistics; physical distribution (concepts and critical decisions); Sales quotas, sales territories; Sales budget, Sales meeting, Sales contests.

[Cases discussion]

Practical project: Study on Distribution structure and Role of personnel selling.


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CSM 304

SPECTROSCOPY**UNIT – I****UV-visible Spectroscopy**

Instrumentation, Characteristic absorption of organic compounds, Interpretation of spectra. Applications of UV-visible spectroscopy.

Photo electron spectroscopy

General theory and application of UV and X-Ray photo electron spectroscopy, a general idea of auger photoelectron spectroscopy, applications of photoelectron spectroscopy, Auger spectroscopy to the study of surfaces.

UNIT – II**Infrared Spectroscopy**

Introduction, vibration modes, Degree of freedom for linear and non linear molecules, instrumentation (Dispersive and non dispersive instrument), applications and interpretation of spectra, GC-IR analysis

Raman Spectroscopy

Introduction, Stoke's line, Antistoke's line, theory, Raman shift and applications

UNIT – III**Nuclear Magnetic Resonance Spectroscopy**

Theory, Chemical Shift, Spin-spin splitting, environmental effect on NMR spectra. Instrumentation, rules governing the interpretation of H^1 NMR spectra. Application of H^1 NMR to quantitative analysis

C^{13} NMR : Historical Development, various terms used in C^{13} NMR, application of C^{13} NMR to structure determination, two dimensional NMR spectroscopy

UNIT – IV

ESR: Concept, comparison between NMR and ESR, theory, instrumentation, presentation of ESR spectra, applications, ENDOR, ELDOR

NQR: Theory, interaction of nuclear quadrupole with electromagnetic radiation, Instrumentation & applications of nuclear quadrupole spectroscopy .

UNIT – V**Mass Spectroscopy**

Concepts in Mass spectroscopy, Instrumentation, rules of spectral interpretation and application of Mass spectroscopy, McLafferty rearrangement, acylium ion, oxonium ion, tropylium ion, molecular ion and metastable ion

Mossbauer (Fe & Sn)

General theory, instrumentation and important applications of Mossbauer Spectroscopy.

CSM 305 (A) POLYMER SCIENCE II

UNIT - I

Polymer Rheology and Morphology

Introduction stress and strain, ideal elastic solid, Newtonian and non-newtonian fluid. Apparent viscosity the power, low molecular hole concept, weissenberg effects, rheological properties of fluid, melt fracture and irregular, time dependent flow, viscoelastic behaviour, mechanical model of a viscoelastic material relaxation enhancement under constant stress. Hysteresis, creep and relaxation of typical plastics.

Physical & mechanical testing of Polymer

Stress-strain measurement, dynamic mechanical behaviour, stress cracking, hardness, tear strength or tear resistance, resilience's, flex cracking resistance, abrasion resistance, impact resistance.

UNIT - II

Polymer processing

Compression moulding, casting, extrusion, injection moulding, thermoforming, Fibre spinning(melt, dry and wet spinning)

Polymer Products

Belting, hoses, rubber footwear, Rubber to metal bonded components, cellular rubbers, sports goods, cables, latex products, rubber rollers, extruded and moulded products.

UNIT - III

Functions and example of compounding ingredients

- | | |
|---------------------|----------------------|
| (1) Activators | (2) Accelerators |
| (3) Blowing agents | (4) Softners |
| (5) Pigments | (6) Tactifers |
| (7) Release agents | (8) Reclaimed rubber |
| (9) Tactics | (10) Ground crumb |
| (11) Mineral rubber | (12) Retardecs |

Fillers

Carbon Black: Introduction manufacturer and morphology, Physical & chemical properties, effect of carbon black properties on compounding, mixing & dispersion.

Non Black Fillers: Introduction, manufactures, characteristics and application of calcium carbonate, clays, silica in the rubber industry.

UNIT - IV

Adhesives:

Solvent based, water based and adhesives based on various polymers. Epoxide resins curing of epoxide resins. Dilutents and other additives and their applications.

Composite materials, properties, advantages and methods of preparation.

Blends: Preparation, processing, properties, uses and Industrial aspects.

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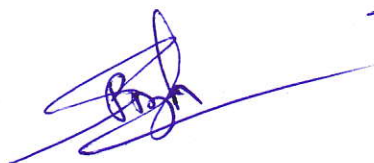

UNIT - V

Chemical Testing

Identification of materials by elemental and solubility analysis. Identification by colour tests. Estimation of specific chemical characteristics like; acid number, saponification value and hydroxyl value. Solvent extractions and its analysis for polymers

Analysis & Testing of Polymers

Thermal analysis: DSC, TGA, TMA, DTA



UNIT - I

Drugs acting on gastrointestinal disorders

- (a) Agents for control of gastric acidity and treatment of peptic ulcers: Classification, pharmacology, mode of action, adverse effects of Ranitidine, Sodium bicarbonate, Magnesium Hydroxide, Aluminum Hydroxide Gel, Sucralfate.
- (b) Emetics and Antiemetics drugs.
- (c) Drugs for constipation and Diarrhoea: Classification, pharmacology, mode of action, adverse effects of Bran, Ispaghula, Diphenylmethanes, Sulfasalazine, Codeine.

UNIT - II

Cardiovascular drugs

- (a) **Cardiovascular Drugs:** Classification, pharmacology, mode of action, adverse effects of Digoxin, Digitoxin, Clonidine, Hydralazine, Methyldopa, Nitroglycerine, Isoxsuprine, Prenylamine, Disopyramide Phosphate, Procainamide Hydrochloride.
- (b) **Hematopoietic Agents:** Growth factors, minerals, anticoagulants, thrombolytic and antiplatelet drugs

UNIT - III

Drugs acting on Kidney

- (a) **Diuretics:** Classification, pharmacology, mode of action, adverse effects of Chlormerodrin, Hydrochlorothiazide, Acetazolamide, Chlorthalidone, Furosemide, Spironolactone, Mannitol.
- (b) **Antidiuretics:** Classification, pharmacology, mode of action, adverse effects of Lypressin, Amiloride, Carbamazepine.

UNIT - IV

- (a) **Drugs of Arthritides & Gout:** Classification, pharmacology, mode of action, adverse effects of d-Penicillamine, Chloroquine, Sulfasalazine, Colchicine, Allopurinol.
- (b) **Drugs of Cough and Bronchial Asthma:** Classification, pharmacology, mode of action, adverse effects of Codeine, dextromethorphan, bromhexine, ambroxol, guaiphenesin, isoprenaline, salbutamol, Theophylline, Aminophylline, Atropinmethonitrate, ketotifen.

UNIT - V

- a. **Drugs acting on skins and mucous membrane:** Demulcents (Glycerine), Emollients (Vegetable Oils), Adsorbents and protectives (Calamine, Zinc Oxide,

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Zinc/ Magnesium stearate, Dimethicone), Astringents (Tannia acid, alcohol, minerals), Melanizing Agents, Drugs of Psoriasis (Calcipotriol), Demelanizing Agents (Hydroquinone, Monobenzene), Sunscreens, Drugs for acne vulgaris (Benzoyl peroxide, Retinoic acids, Antibiotics, Isotretinoin).

b. Anti Fungal Drugs: Classification, pharmacology, mode of action, adverse effectsof amphotericin B, Ketoconazol, Griseofulvin, Itaraconazol.

c. Antiviral Drugs: Classification, pharmacology, mode of action, adverse effectsof Acyclovir, Amantidine hydrochloride, Zidovudine.

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CSM-401 BUSINESS LAW

UNIT-I

Industrial Jurisprudence

Industrial jurisprudence- an overview, principles of industrial jurisprudence, constitutional aspects of industrial jurisprudence.

UNIT-II

Laws on Working Conditions

The factories act, 1948; the mines act, 1952; the shop & establishment law, the plantation labor act, 1959; the contract labor (regulation and abolition act, 1970), the child labor (prohibition and regulation act, 1986)

UNIT-III

Laws on Industrial Relations

The trade union act, 1926; the industrial dispute act, 1947; the industrial employment (standing order) act, 1946; domestic enquiry

UNIT-IV

Lawson Wages

The minimum wages act, 1948; the payment of wages act, 1936; the payment of bonus act, 1965; the equal remuneration act, 1976

UNIT-V

Law on Social Security

The workmen's compensation act, 1923; the employees' state insurance act, 1948; the maternity benefit act, 1961; the employees' provident fund and miscellaneous provisions act, 1952; the payment of gratuity act, 1972

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CSM-402 BUSINESS POLICY AND STRATEGIC ANALYSIS

UNIT-I: Business Policy – An Introduction:

Nature, Importance, Purpose and Objectives of business policy, Various terms in business policy, Levels of strategy.

An Overview of Strategic Management, Nature of strategic decision making, Patterns of strategic behavior, Process of strategic management.

UNIT-II : Competitive Advantage:

External environment, Porter's five forces model, Globalization and Industry structure, National context and Competitive advantage resources, Capabilities and Competencies, Low cost and differentiation, Generic building blocks of competitive advantage, Distinctive competencies, Resources and capabilities, Durability of competitive advantage, Avoiding failures and sustaining competitive advantage.

UNIT-III: Strategy Formulation:

Environmental Appraisal – Components, Environmental scanning and Appraisal.

Organizational Appraisal – Organisation capability factors, Organisation appraisal.

Strategic alternatives, Strategic choice and SWOT analysis.

UNIT-IV: Strategy Implementation:

Project and procedural implementation.

Structural Implementation – Structural considerations, Structures, Organisation design and change.



Functional Implementation – Financial, Marketing, Operations, Personnel plans and policies.

Behavioral Implementation – Leadership, Corporate culture, Personal values and Business ethics.

UNIT-V: Strategy Evaluation and Other Strategic Issues:

Strategic Control – Basic types of control, Operational Control – Process of evaluation, Techniques of evaluation and control, Role of organisation system,

Other Strategic Issues: Managing Technology and Innovation, Entrepreneurial ventures and small business, Non profit organizations.

Unit - I **International Marketing** : Nature, scope, challenges, Development of Global Marketing, Major, Participants in International Marketing, Factor affecting, Importance of International Marketing, Balance of Payment Vs Balance of Trade, Theories of International Trade : Adam Smith (Comparative Cost) & Ricardo (Comparative Advantage).

Unit – II **Scanning International Marketing Environment.**
Environmental Analysis – Economic, Commercial, Social, Cultural, Political, Regional, Legal and Trading (Trade Barriers) Environment. State Trading, International Market Selection and Market Entry Strategies.

Unit – III **International Marketing Strategies.**
Product Strategies – Product Concept, PLC, NPD, Branding, Packaging and Labelling, Alternative product strategies and product communication strategies, **International Pricing** – Pricing Concept, Objectives, Factors, Pricing methods/ approaches, Transfer Pricing, dumping, Retrograde pricing. **Distribution** – Distribution system, structure, Strategies, Factors affecting selection of channels, Logistic management. **Promotion** – Single country promotion process and multicountry communication process, Promotion strategies (Push, Pull, Push Vs Pull), Advertising, Personal Selling, Sales promotion, sponsorships, Trade fair and Exhibitions.

Unit – IV **Export and Import Management –**
Export Management – Export promotion (objectives, Incentives, Production assistance, Marketing assistance, Import facilities to exporters), Export financing (Sources of Funds), Role of Export houses, Export procedure and documentation.
Import Management – The Import process, Types of Importers, Import procedure and documentation.

Unit – V **International Economics Institutions –**
Regional Economic Integrations – Free trade areas, Custom Unions, Common Markets, Monetary Unions, The global economy.
Economic Institutions – IMF, IBRD or World Bank, ECM or EEC, GATT and WTO.

Suggested Readings :

- 1. M.N.Mishra : International Marketing Management
- 2. F.Churunilam : International Business
- 3. Jeannet and Hennessey : Global Marketing Strategies

IC 404 A - PETROCHEMICALS, OILS & SOAPS

UNIT – I

Petrochemicals: Constituents of Petroleum, Processing or Refining, Petrochemicals, Feedstock's, Preparation of methane, ethylene, propylene, butylenes and cyclic compounds from petrochemical.

UNIT – II

Oils: Edible and nonedible oils, chemical composition and physical properties of vegetable oils, Method of extracting oils, Hydrogenation of oils.

UNIT – III

Soaps and detergents: Cleaning agents, Soaps, manufacture of soaps, Glycerin, Methods of production of glycerin, Detergents, manufacture of various kinds of detergents, cleaning action of soaps and detergents, Use Pattern, Saponification value, Acid values, Iodine value, Total fatty matter.

UNIT – IV

Surfactant & Disinfectant: Surfactants, classification of surfactant, Raw material of surfactants, Different Bleaching agents, Function of bleaching agents. Disinfectant, classification of disinfectant, and its application, Phenolic derivative as disinfectant, Phenolic coefficient.

UNIT – V

Lubricants: Introduction, surface energy, Adsorption, Laws of friction, Theories of wear, Lubrication, Mechanism of Lubrication, Classification of Lubricants, Lubricating emulsions. Properties of lubricants. Flash point, Fire point, Smoke point, Turbidity point.

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CSM 404 (B) MEDICINAL CHEMISTRY – III

UNIT- I

Drugs acting on CNS:

- (a) Introduction, site and mechanism of action of some neurotransmitters
Dopamine, acetyl choline, GABA, Histamine.
- (b) **General and Local anaesthetics.** Classification, pharmacology, mode of action, adverse effects of Ether, Halothane, Nitrous Oxide, Chloroform, Thiopentone sodium, Ketamine hydrochloride, Lignocaine hydrochloride, cinchocaine, phenacainie HCl, Ethyl- p-amino benzoate.

UNIT- II

- (a) **Sedatives and hypnotics:** Classification, pharmacology, mode of action, adverse effects of Barbiturates (Barbiton, Phenobarbital, Allobarbital, Thiopental sodium), Benzodiazepines (Diazepam, buspirone) and alcoholic hypnotics
- (b) **Tranquilizers or Antianxiety Agents:** Classification, pharmacology, mode of action, adverse effects of Chlorpromazine, Haloperidol, Benzodiazepines.

UNIT- III

- (a) **Anticonvulsants and Antiepileptic drugs:** Classification, pharmacology, mode of action, adverse effects of Phenobarbital, Phenytoin Sodium, Trimethadione, Phensuximide, Primidone.
- (b) **CNS stimulants:** Classification, pharmacology, mode of action, adverse effects of Caffeine, Theophylline, Doxapram, Cocaine.
- (c) **Hallucinogens:** Classification, pharmacology, mode of action, adverse effects of Lysergic acids Diethylamide (LSD)

UNIT- IV

- (a) **Antiseptic and Disinfectants:** Classification, pharmacology, mode of action, adverse effects of Potasiumpermanganate, Hydrogen peroxide, Chlorhexidine, Cetrimide, ethanol, glutaraldehyde, silver nitrate, silver sulfadiazine, gentian violet, acriflavine.
- (b) **Ectoparasiticides:** Classification, pharmacology, mode of action, adverse effects of Benzyl benzoate, Lindane.
- (c) General Treatment of Poisoning

UNIT – V

Anti diabetic drugs and Insulin

Classification, Pharmacology, mode of action, adverse effects of Chlorpropamide (Glipizide, Gliclazide, Glimepiride), Metformin, Nateglinide, Rosiglitazone and Miglitol. Insulin and its mode of action


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CSM 405 (A) INDUSTRIAL CHEMICALS

Unit – 1

- (a) Manufacturing of Zeolites, raw material used, uses of zeolite as catalyst in isomerization, dehydration and dehydroxylation. Zeolites as builder in detergents.
- (b) Chemicals derived from ethylene viz. Isopropyl alcohol, acrylate, vinyl chloride.

Unit – II

Preparation, properties and applications of the following-

Alkali industrial products: Caustic soda, sodium carbonate, sodium bicarbonate.

Phosphorus chemicals: Phosphorus, phosphoric acid, ammonium Phosphate, super phosphate.

Unit – III

Glass & Ceramic Industries

- (a) **Glass Industries:** Introduction, Composition & Raw materials, types and manufacturer of glasses.
- (b) **Ceramic Industries:** Introduction, Uses, Raw materials types and manufacture of different ceramics, A brief account of refractories.

Unit – IV

Preparation, properties and applications of the following-

Lime, Gypsum, Plaster of Paris, Alumina, Chlorine, Bromine and Iodine.

Unit – V

Water and water treatment:

Water and water treatment sources, characteristics of water, impurities present in water. Industrial water requirement and softening methods (lime soda method, zeolite and ion-exchange method), water analysis (determination of hardness by complexometry, alkalinity, chlorides, B.O.D, C.O.D., residual chlorine)



CSM-405 (B)CLINICAL PATHOLOGY & DIAGNOSTIC TECHNIQUES

Unit – I

Collection and handling of blood,RBC Counting ,WBC (total &DLC) Counting
Platelets structure function and counting, Haemoglobin structure & Function ,
ESR,PCV

Unit – II

Urine examination – Composition, Sample collection, Preservation, Physical
examination, Chemical examination & Microscopic examination of urine.

Unit – III

General description, Collection, Preservation, Physical examination, Chemical
examination & Microscopic examination of stool, Sputum & Semen.

Unit – IV

Inflammation, regeneration & healing Primary union & Secondary union,
vascular disorders – congestion, Ischaemia, Haemorrhage, Thrombosis &
Infarction cyanosis.

Unit – V

Metabolic disorder – Jaundice (Physiological and Pathological Jaundice)
Hepatolenticular degeneration (Wilson’s disease)
Brief idea about Biopsy
Principles of autopsy (postmortem)

