

**Syllabus**

**M.B.A. (CSMM)**  
**Batch 2013-2015**

**(M.B.A.) CHEMICAL, SALES AND MARKETING MANAGEMENT**  
**JIWAJI UNIVERSITY, GWALIOR**

MBA in chemicals sales and Marketing Management has following specialization.

1. Industrial Chemicals Marketing (Group-A)
2. Pharmaceutical Marketing (Group-B)

The management papers are compulsory and candidates have to give their choice for specialization in the beginning of the course. After a specialization is offered it cannot be changed in the forth coming semester. The scheme of examination is as follows:

**I Semester**

**COMPULSORY PAPER**

<b>Code</b>	<b>Title</b>	<b>Ext. Ass.</b>	<b>Int. Ass.</b>
CSM-101	Management Concepts and Processes	70	30
CSM-102	Management Accounting	70	30
CSM-103	Marketing Research & Analytical Techniques	70	30

**Elective Group – A**

CSM-104	Analytical Chemistry	70	30
CSM-105	Pesticide Chemistry	70	30
CSM-106	Paints & Pigments	70	30

**Elective Group – B**

CSM-104	Analytical Chemistry	70	30
CSM-105	Biochemicals	70	30
CSM-106	Anatomy & Physiology	70	30

**II Semester**

**COMPULSORY PAPER**

<b>Code</b>	<b>Title</b>	<b>Ext. Ass.</b>	<b>Int. Ass.</b>
CSM-201	Marketing Management	70	30
CSM-202	Financial Management	70	30
CSM-203	Business Environment	70	30

**Elective Group – A**

CSM-204	Chemistry of Natural Products	70	30
CSM-205	Unit Operations	70	30
CSM-206	Polymer Science-I	70	30

**Elective Group – B**

CSM-204	Medicinal Chemistry - I	70	30
CSM-205	Microbiology	70	30
CSM-206	Pharmaceutics	70	30

### **III Semester**

CSM-301	Organizational Behaviour	70	30
CSM-302	Elective - I	70	30
CSM-303	Elective - II	70	30

#### **Elective Group - Marketing Management**

Elective - I	Advertising Management
Elective - II	Sales & Distribution Management

#### **Elective Group - Human Resource Management**

Elective - I	Human Resource Management & Planning
Elective - II	Human Resource Development

#### **Elective Group - Production Management**

Elective - I	Production Management
Elective - II	Operation Research

#### **Elective Group – A**

CSM-304	Spectroscopy	70	30
CSM-305	Polymer Science-II	70	30
CSM 306	Project & Project Viva	70	30

#### **Elective Group – B**

CSM-304	Spectroscopy	70	30
CSM-305	Medicinal Chemistry-II	70	30
CSM 306	Project & Project Viva	70	30

### **IV Semester**

CSM-401	Business Law	70	30
CSM-402	Elective – I	70	30
CSM-403	Elective – II	70	30

#### **Elective Group - Marketing Management**

Elective - I	Business Policy and Strategic Analysis
Elective - II	International Marketing

#### **Elective Group -Human Resource Management**

Elective - I	Wage & Salary Administration
Elective - II	Employment Relations

### **Elective Group -Production Management**

Elective - I    Material Management  
Elective - II    Supply Chain Management

### **Elective Group – A**

CSM-404	Petrochemicals, Oils & Soaps	70	30
CSM-405	Industrial Chemicals	70	30
CSM-406	Project & Project Viva	70	30

### **Elective Group – B**

CSM-404	Medicinal Chemistry-III	70	30
CSM-405	Clinical Pathology & Diagnostic Techniques	70	30
CSM-406	Project & Project Viva	70	30

**Course Objective:** The objective of the course is to help the students to gain an understanding of the functions and responsibility of the managers which will serve as a foundation for the study of most of the functional areas in the MBA program.

**Unit - I** **Introductory** – Concept of Management and its significance, Management Process, Management Roles, Management level and Management skills, Functional Areas of Management. Trends in professionalisation of Management in India.

**Evolution of Management Theory** – Classical School, Scientific Management School, Human Relations School, Behavioural School.

**Approaches to Management** – Commodity, Paternalistic, Behavioural, 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. Kooutz O'Donnell & 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.

**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.  
and Grewal

## **CSM - 103 (A+B) 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:**

Probability theory & probability distributions  
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

**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, titration curves, 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, organic precipitation.

**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, theories, 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, theory, instrumentation, interferences and factors affecting flame photometry.

**Atomic Absorption Spectroscopy**

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



**UNIT - I**

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

**Insecticide of Plant Origin:** Nicotine, Pyrethroids, allthrin.

**Fungicides:** Dichlone, captan

**UNIT - II**

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

**Chlorinated hydrocarbon:** BHC, heptachlor, aldrin, dieldrin, endosulfar, SAR in the class.

**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.

**UNIT – I****Carbohydrates**

monosaccharide, Disaccharide and polysaccharide.

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

Glyoxylate cycle, 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

Chemical kinetics and mechanism of enzyme – substrate complex

Factors governing enzyme activity & Isozymes & inhibition of enzymes

General structure of nucleic acid.

**UNIT – IV**

Introduction & classification of lipids.

Biosynthesis & oxidation of fatty acids including  $\beta$ -oxidation.

Ketonebodies & their oxidation.

Disorders of lipid metabolism.

**UNIT - V**

Introduction, classification of hormones.

Hormone receptors & intracellular messengers.

Hormones of thyroid, adrenal, gonads & pituitary.

Fat & water-soluble vitamins & their deficiency.

## **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. Some commercial dyes viz.

Azo dyes, Acid, acid mordant, direct milling and stilbene azo dyes, Basic dyes  
Anthraquinone (Vat) 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 architecture of Human body.

**Cell** – Basic structure of Cytoplasm, cellulose (Chromosomes and genes) and cell membrane, with their function.

**Tissues:** Classification, differences and function.

**Muscles:** 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:** Type & functions Exocrine 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 and nose: Structure function.

### **UNIT – III**

**Blood, circulatory system, Respiratory system**

**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.

Brief idea about lung volumes and capacities

Bronchial asthma

**Digestive, Urinary and Genital 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**

**Excretory System:** Parts, function and urine formation.

**Male genital system:** Parts and function.

**Female genital system:** Parts and function.

Spermatogenesis and oogenesis

**Course Objective:** The objective of the course is to provide an understanding of the underlying concepts, strategies and issues involved in exchange of products and services between the firms and markets.

**UNIT - I Marketing : An Overview –**

**Introduction** – Evolution, Distinctive, Functions and Scope, Process, and Types of Marketing, Difference between Marketing and Selling, Marketing Mix, Marketing Segmentation and Targeting, New Challenges in new “Connected” Millennium, Business actions towards socially responsible marketing (Enlightened Marketing and Marketing Ethics).

**UNIT – II Product and Price Management –**

**Product Management** – Meaning and Classification of Product, Product Policy and Product Planning, Product Mix and Product line, NPD concept, PLC Concept, Various Product Concepts (Product Personality, Product differentiation, Product Positioning, Product Modification, Product diversification, Product dropping, Branding, Packaging, Logo, TM, Labeling) .

**Price Management** – Meaning, Importance, Objectives, Influencing factors, and procedure of Pricing, Pricing Policy and Methods and Pricing Strategies or Tactics, Various Pricing concepts (Price dumping, Discrimination, Price Vs Nonprice competition, Resale price maintenance, Price sensitivity, Allowances)

**UNIT – III Promotion and Distribution Management –**

**Promotion Management** - Concept of Marketing Communication, Marketing Communication Process, Promotion Concept, Types of Promotion and Promotion Mix, Advertising (Nature, Scope, Role, Importance, Developing ad programme), Sales Promotion (Purpose, Decisions and Types), Personal Selling (Designing and Managing Sales force, Principles of P.S.), Public Relations (Decision in P.R.)

**Distribution Management** – Role, Importance, Types, Levels, Influencing factors, Channel design and management decisions, Physical Distribution (Importance and Types), Retailing and Whole selling Types, Fronds and Decision.

**UNIT – IV Marketing and Different Fields –**

**Industrial Marketing:** Industrial Marketing perspective, industrial vs consumer marketing, classification of industrial goods, types of organizational customer and their characteristics, segmenting organizational market, industrial marketing planning, industrial buying process, buying situation analysis, vendor rating analysis.

**UNIT – V**     **Customer Relationship Management:** Definition, measurement of CRM, customer response, customer satisfaction, loyalty and customer retention, complaint management, customer retention and its effect on profitability, strategies for improving customer retention, six E's of relationship marketing, CRM implementation.

- 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 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** - Divided 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



**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,  $\beta$ -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,  $\beta$ -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.

## 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.
- d) Adverse drug effects.

### UNIT - II

#### Antipyretics analgesics

- a) **Some common antipyretic drug:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of paracetamol, acetanilide, aspirin, cincophen, phenazone, mefenamic acid
- b) **Opoid analgesic or Narcotic analgesic drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Morphene sulphate, codeine, levorphanon tartrate, metazocine, pethidine hydrochloride.
- c) **Non steroidal anti inflammatory drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Indomethacine, Ibuprofen, Neproren, Auranofin.

### UNIT- III

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

## UNIT - IV

### Antibiotics

- a)  **$\beta$ -Lactam antibiotics:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Penicilline (Benzyl penicilline, cloxacillin, ampiciline) and Cephalosporins (cephalexin).
- b) **Aminoglycosides Antibiotics:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Streptomycin, neomycin.
- c) **Tetracyclines and chloramphenicol:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Tetracycline, Minocycline and Chloramphenicol.
- d) **Mecrolide Antibiotics:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Erythromycin.
- e) **Treatment of urinary tract infection:** Antimicrobial agents

## UNIT -V

- a) **Antitubercular Drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Isoniazid, Rifampin, Streptomycin.
- b) **Antileprotic Drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Dapsone, Clofazimine, Rifampin.
- c) **Antimalarial Drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Chloroquine, Primaquin Phosphate.
- d) **Antiamoebic & Antiprotozoal Drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Mtroniadazole, Diloxanide Furoate, Sodium stibogluconate, Pentamidine.

## **CSM 205 (A)**

## **UNIT OPERATIONS**

### **UNIT – I**

#### **Distillation**

Introduction; VLE, Batch and continuous distillation, McCabe Thiele method, Reflux ratio, q-line, 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, draft tube 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, itch filter, rotatory drum filter, sparkler filter, candle filter, bag filter, centrifuge.

#### **Size Reduction and size Separation**

Definition, objectives of size reduction, factors affecting size reduction, Law governing energy and power requirement of mills including ball mill, hammer mill, fluid energy mill etc.

#### **Mixing**

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

## **UNIT – V**

### **Drying**

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

### **Ideal Reactors**

Performance equation for ideal CSTR & PFR, Batch reactor, Reactor fundamentals, Constant and Variable volume Batch reactor.

## **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

**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), compounding and processing technology, vulcanization of elastomers, theory and accelerator action of sulphur vulcanization, non-sulphur vulcanization, ebonite latex technology some major rubber products. Polymer industries in India.



### **Polymer degradation and stabilizers**

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

### **UNIT – V**

#### **Plastics Materials**

Introduction, Synthesis, properties and uses of following:

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

UNIT – IThe 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, therepeutics consideration in dosage form design,
- b) **Preformulation:** Concept of preformulations, Uxorious aspects of preformulations, spectroscopy, solubility, melting point, powder flow properties, assay development.

UNIT – IIPhysiochemical 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, assement 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 – IVStudy 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, flocculations 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 theory, ERG Theory, Herzberg Motivation Theory, Vroom's Expectancy theory.
- 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 Kahn : The Social Psychology of Organisations

- 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 Extention, Rules and Risk of Brand Extensions, Measurement of Brand Equity, Categories of Brand Equity (Cost, Price and Consumer Base).

## **CSM 302- HRM      HUMAN RESOURCE MANAGEMENT & PLANNING**

### **Unit – I Context, Concept & Boundaries**

The changing social context & immerging issues, the concept & junction of human resource management, structuring human resource management.

### **Unit – II Getting Human Resource**

Job analysis & job design, job evaluation-concept & methods, competency approaches to job analysis, changing nature of roles.

### **Unit - III Key Practices**

Recruitment, selection, dislocation & relocation of employees, orientation, career & succession planning, performance & potential appraisal

### **Unit – IV Basics of Human Resource Planning**

Introduction to human resource planning system – the emerging context, process & functioning of human resource planning, methods & techniques of demand management, methods & techniques of supply management, contemporary trend in managing demand & supply

### **Unit – V Compensation & Reward Management**

Laws covering wages, welfare & benefits, compensation strategy, structure & composition, reward management

## **CSM – 302 PM      PRODUCTION MANAGEMENT**

### **Unit – I Production Design**

Process planning- plant capacity – capacity planning- make or buy decisions – Use of cross-over chart for selection process. Plant location: Factories to be considered in plant location- choice of general region, particular community and site – Multi-plant location decision – Plant location trends.

### **Unit – II Layout of facilities**

Principles of good layout – Layout factors – Basic types of layout – Service facilities – Principles of materials handling – Materials handling equipment. Human factors in Job-design, Consideration of Man and machine in job – design, adaptation of machine to man – Ergonomics – Working environment – Worker safety.

### **Unit – III Methods Analysis and Work Measurement**

Methods study procedures – The purpose of time study – Stop watch time study – Performance rating – Allowance factors – Standard time – Work sampling technique.

### **Unit – IV Maintenance**

Preventive Vs. Breakdown maintenance – Break-down time distribution – Maintenance cost balance – Procedure for maintenance.

### **Unit – V Quality Control**

Purposes of inspection and quality control – Acceptance sampling by variables and attributes – Control charts for variables, fraction defectives and defects.

## **CSM – 303 MM 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, Relation ships 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.



**Unit – I Human Resource Development System**

Prerequisites, tasks of HRD department, role, function & efficacy of HRD system, human resource development strategy

**Unit – II Human Resource Development Concept**

Career system (career planning & performance appraisal), competency mapping, coaching & mentoring

**Unit - III Human Resource Development System & Profession**

Reward system, self reward system, HRD for workers, professionalism in HRD, HRD strategies & experiences

**Unit – IV Human Resource Development Techniques**

Training, mentoring & performance coaching, building roles & teams

**Unit – V Human Resource Development Issues & Experiences**

HRD audit, multi source feed face, technology & HRD, diversity management, managing globalization

**Unit- I      *Basics of OR***

Introduction, objective, scope, necessity of OR in industries, Role of OR in decision making, types of mathematical models, OR methodology, limitations of OR.

**Unit – II      *Linear Programming***

Introduction, formulation of linear programming, production allocation problem, production planning problem, advertising media selection problem, product mix problem, blending problem, diet problem, production scheduling problem, warehouse problem, graphical solution of two variables, simplex method. Advantages and limitations of linear programming.

**Unit – III      *Transportation Model***

Introduction, problem statement, Northwest Corner rule, Stepping Stone method, MODI method, Vogel's method, unbalanced transportation problem.

Network Model: Introduction, minimal spanning tree technique, maximal flow technique, shortest route technique.

**Unit – IV      *Project Management***

Phases of Project Management, Work Breakdown Structure, Network Logic, PERT/CPM, Cost Analysis, Resource Scheduling.

**Unit – V      *Forecasting:*** Types of forecasts. Measures of forecast accuracy, time series forecasting models, causal forecasting methods, monitoring and controlling forecast, queueing theory, decision theory, Markov Analysis.

## CSM 304 (A+B)

## SPECTROSCOPY

### UNIT – I

#### UV-visible Spectroscopy

Theory, Instrumentation, Characteristic absorption of organic compounds. Woodward and fiser rules for calculating  $\lambda$  max. Interpretation of spectra. Application of UV-visible spectroscopy.

#### Photo electron spectroscopy

general theory and application of UV and X-Ray photo electron spectroscopy (UV PES and ESCA) a general idea of auger photoelectron spectroscopy, application of photoelectron spectroscopy, ESCA and Auger spectroscopy to the study of surfaces.

### UNIT – II

#### Infrared Spectroscopy

Theory, vibration modes, instrumentation (Dispersive and non dispersive instrument), applications and interpretation of spectra  
Brief idea of Raman Spectroscopy

### UNIT – III

#### Nuclear Magnetic Resonance Spectroscopy

Theory of NMR, Chemical Shift, Spin-spin splitting, environmental effect on NMR spectra. Instrumentation, CW or FTNMR instrument, rules governing the interpretation of  $H^1$  NMR spectra. Application in quantitative analysis, spectroscopy of others important nuclei.  $^{15}N$ ,  $^{19}F$ ,  $^{29}Si$ ,  $^{31}P$

$^{13}C$  NMR : Historical Development, various terms used in  $C^{13}$  NMR, application of  $C^{13}$  NMR to structure determination, two dimensional NMR spectroscopy, principle, the COSY experiment, COSY (DQF) and NOESY experiment, three dimensional NMR experiment

### UNIT – IV

Concept, instrumentation & use of ESR spectroscopy, ENDOR, ELDOR

NQR: Theory, Instrumentation & application of nuclear quadrupole resonance spectroscopy.

### UNIT – V

#### Mass Spectroscopy

Concepts in Mass spectroscopy, Instrumentation, rules of spectral interpretation and application of Mass spectroscopy, McLafferty rearrangement.

#### Massbaur (Fe & Sn)

General theory, instrumentation and important applications of Massbaur Spectroscopy.

**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, Fiber-spinning, injection moulding, thermoforming

**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.

**Reinforcing and extending filler:** Introduction manufactures characteristics and application of some representative fillers.

## **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.

## **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

## CSM 305 B      MEDICINAL CHEMISTRY –II

### 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, synthesis and structure activity relationship of Ranitidine, Sodium bicarbonate, Magnesium Hydroxide, Aluminum Hydroxide Gel, Sucralfate.
- (b) Emetics, Antiemetics and other Gastrointestinal drugs.
- (c) Drugs for constipation and Diarrhoes: Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Bran, Ispaghula, Diphenylmethanes, Sulfasalazine, Codeine.

### UNIT - II

#### Cardiovascular drugs

- a) **Cardiovascular Drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Digoxin, Digitoxin, Clonidine, Hydralazine, Methyldopa, Nitroglycerine, Isoxsupurine, Prenylamine, Disopyramide Phosphate, Procainamide Hydrochloride.
- b) **Hematopoietic Agents:** Groth factors, minerals, anticoagulants, thrombolytic and antiplatelate drugs

### UNIT - III

#### Drugs acting on Kidney

- a) Relevant physiology of urine formation
- b) **Diuretics:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Chlormerodrin, Hydrochlorothiazide, Acetazolamide, Chlarthlidona, Furosemide, Spironolactone, Mallitol.
- c) **Antidiuretics:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Lypressin, Amiloride, Carbamazepine.

#### **UNIT - IV**

- (a) **Drugs of Arthritides & Goat:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Gold, d-Penicillamine, Chloroquine, Sulfasalazine, NSAIDs, Colchicine, Allopurinol.
- (b) **Drugs of Cough and Bronchial Asthama:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Codeine, dextromethorphan, bromhexine, ambroxol, guaiphenesin, isoprenaline, salbutamol, Theophylline, Aminophylline, Atropin methonitrate, ketotifen.
- (c) Treatment of drug allergies

#### **UNIT - V**

- a. **Drugs acting on skins and mucous membrane:** Demulcents (Glycerine), Emollients (Vegetable Oils), Adsorbents and protectives ( Calamine, Zinc Oxide, 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 effects, synthesis and structure activity relationship of amphotericin B, Ketoconazol, Griseofulvin, Itaraconazol.
- c. **Antiviral Drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Acyclovir, Amantidine hydrochloride, Zidovudine.

**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



## CSM-402MM 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 organization system,  
Other Strategic Issues: Managing Technology and Innovation, Entrepreneurial ventures and small business, Non profit organizations.

## **CSM-402HRM Wage & Salary Administration**

### **Unit – I Compensation – Concept & Context**

Role of compensation & reward in organization, economic & behavioral issues in compensation, framework of compensation policy.

### **Unit – II Compensation Structure & Differentials**

Pay packet compensation, institutional mechanism for wage determination, job evaluation & internal equity, external equities and pay surveys.

### **Unit - III Key Reward System Incentives & Pay Restructuring**

Design & performance linked reward system, incentives for blue & white collars, bonus, profit sharing & stock options, allowances & benefits, downsizing & voluntary retirement schemes.

### **Unit – IV Emerging Issues & Trends**

Tax planning, comparative international compensation, overview of future trends in compensation management

### **Unit – V Legal Framework of Wage & Salary Administration**

Wage concept, definition of wage under various labor legislation, laws relating to payment of wage & loners, regulation of minimum wages & equal remuneration, laws relating to retirement benefits

## **CSM-402PM MATERIAL MANAGEMENT**

### **Unit – I Introduction**

Manufacturing planning and control system, sales and operations planning, manufacturing resource planning, making the production plan.

### **Unit – II Production scheduling**

Introduction to production plan, developing master production schedule, production activity control. Bills of material, material requirements planning process

### **Unit – III Sourcing decisions & Purchasing Process**

Importance of purchasing, sourcing decision, in sourcing and outsourcing, sourcing strategies, purchasing process.

### **Unit – IV Logistics**

Warehouse management, physical control & security, inventory record accuracy, transportation, warehousing, packaging, material handling, multi warehouse systems.

### **Unit – V JIT**

Just in time philosophy, just in time environment, lean production system. Introduction to Toyota production system.

**Unit - I International Marketing : An Overview** – 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) & Recardo (Comparative Advantage).

**Unit – II Scanning International Marketing Environment.**  
**Environmental Analysis** – Economic, Commercial, Social, Cultural, Political, Regional, Legal and Trading (Trade Barrios) 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, Impact 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.

**Note** – Cases and presentation should be organized in the classes throughout the session and should be asked in the semester examinations.

**Suggested Readings :**

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

## **CSM-403 HRM EMPLOYMENT RELATIONS**

### **Unit – I Concept, framework of Employment Relation**

Concept, scope & approaches to industrial relations, evaluation of industrial relation & current developments, constitutional & legal framework industrial relations.

### **Unit – II Trade Unionism**

Trade union development & functions, trade union structure & recognitions, managing trade unions, managing unionism

### **Unit - III Collective Bargaining**

Nature & context of collective bargaining, negotiation skills, issues & skills in collective bargaining

### **Unit – IV Employer – Employee Relations**

Regulatory mechanism in industrial relations, dealing with unions & associations, industrial democracy, grievance handling & discipline, conciliation, arbitrations & adjudication

### **Unit – V Employee Involvement**

Evolution, structure & process, design & dynamics of participative forums, strategies for implementing participation

## **CSM-403 PM SUPPLY CHAIN MANAGEMENT**

### **Unit -1 Introduction**

Objectives of SCM, Development Chain, attributes of SCM, evolution of SCM, key issues in SCM.

### **Unit – II Inventory Management & Risk pooling**

Basic Inventory Models – Economic order quantity, Economic batch quantity – Reorder point – Safety stock, risk pooling, centralized vs. decentralize system, strategies in inventory management.

### **Unit – III Network Planning**

Network design – data collection, data aggregation, transportation rates, warehouse costs, warehouse capacities, warehouse locations, service level requirements, future demand.

Inventory positioning – Strategic safety stock, integrating inventory positioning and network design.

Resource Allocation

### **Unit – IV Supply Contracts**

types of contracts, contracts for make to stock/ make to order supply chains, contracts with asymmetric information, contracts for non strategic components.

**Unit - V Supply Chain Integration:** Value of information for SCM, the bullwhip effect, push, pull and push – pull system, impact of lead time, demand driven strategies, impact of Internet on the supply chain strategies.

**Unit – VI Distribution Strategies:** Direct shipment distribution, intermediate inventory storage point strategies, transshipment.

## **CSM 404 (A)      PETROCHEMICALS, OILS & SOAPS**

### **UNIT – I**

**Petrochemicals:** Constituents of Petroleum, Processing or Refining, Petrochemicals, Feedstock's, Petrochemicals from methane, ethylene, propylene, butylenes and cyclic ring. Manufacture of petrochemical by chemical conversion.

### **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, Soapanification value, Acid values, Iodine value, Titer, Rosin value, Total fatty matter.

### **UNIT – IV**

**Surfactant & Disinfectant:** Surfactants, classification of surfactant, Raw material of surfactants, Diff 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.

## CSM 404 (B)      MEDICINAL CHEMISTRY – III

### UNIT– I

#### **Drugs acting on CNS:**

- (a) Introduction, site and mechanism of action of some neurotransmitters  
NA, Dopamine, 5H.T., acetyl choline, GABA, Histamine.
- (b) **General and Local anaesthetics.** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship 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, synthesis and structure activity relationship of Barbiturates (Barbiton, Phenobarbital, Allobarbitol, Thiopental sodium), Benzodiazepines (Diazepan, buspirone) and alcoholic hypnotics (Ethyl Alcohol, methylparafynol, Ethchlorvynol)
- (b) **Tranquilizers or Antianxiety Agents:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Reserpine, Chlorpromazine, Haloperidol, Benzodiazepines.

### UNIT– III

- (a) **Anticonvulsants and Antiepileptic drugs:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Phenobarbital, Phenytoin Sodium, Trimethadione, Phensuximide, Primidone.
- (b) **CNS stimulants:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Caffeine, Theophylline, Doxapram, Cocaine.
- (c) **Hallucinogens:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Lysergic acids, Diethylamide, <sup>9</sup>Δ Tetrahydrocannabinol.

### UNIT– IV

- (a) **Antiseptic and Disinfectants:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Potasium permangnate, Hydrogen peroxide, Chlorhexidine, Cetrimide, ethanol, formaldehyde, glutaraldehyde, silver nitrate, silver sulfadiazine, gentian violet, acriflavine.
- (b) **Ectoparasiticides:** Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Benzyl benzoate, Lindane.
- (c) Principles of Toxicology and General Treatment of Poisoning



## UNIT – V

### DRUG DESIGN

- a) **A rational approach:** Analogues and prodrugs, concepts of lead, factors governing drug design, rational approach of drug design, research and development strategies, tailoring of drugs.
- b) **Physical – Chemical factors and biological activities:** Physical properties, factor governing ability of drugs to reach active site, dissociation constants, isoterism and bio-isoterism.

## **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: Isopropyl alcohol, acrylate, vinyl ester, vinyl chloride.

### **Unit – II**

Chlor alkali industrial products: Caustic soda and chlorine, sodium carbonate, sodium bicarbonate.

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

Synthetic Nitrogen Products: Ammonia, nitric acid, amm. nitrate, ammonium sulphate.

### **Unit – III**

#### **Glass & Ceramic Industries**

(a) **Glass Industries:** Introduction, Composition & Raw material 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**

Lime, Gypsum, Plaster of Paris, Alumina, Hydrochloric and Sulfuric acid, Fluorine, 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 method (lime soda method, zeolite and ion-exchange method), Boiler trouble, causes and remedies, municipal water and its treatment, 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, Hemoglobin 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)