



M.Sc. Chemistry First Year

M.Sc. Chemistry First semester Syllabus Scheme

Name of Subject	Subject Code
THERMODYNAMICS & CHEMICAL EQUILIBRIUM	MCH 101
ORGANIC REACTION MECHANISM AND STEREOCHEMISTRY	MCH 102
INORGANIC CHEMISTRY-I	MCH 103
ADVANCED BIOORGANIC CHEMISTRY	MCH 104
ENVIRONMENTAL CHEMISTRY	MCH 105
INDUSTRIAL MANAGEMENT	MCH 106
ORGANIC CHEMISTRY LAB	MCH 107

M.Sc. Chemistry Second Semester Syllabus Scheme

Name of Subject	Subject Code
CHEMICAL KINETICS AND REACTION DYNAMICS	MCH 201
INORGANIC CHEMISTRY- II	MCH 202
COORDINATION CHEMISTRY	MCH 203
BIOINORGANIC CHEMISTRY	MCH 204
ANALYTICAL CHEMISTRY	MCH 205
ORGANISATIONAL BEHAVIOUR	MCH 206
INORGANIC LAB	MCH 207



M. Sc. Chemistry Detailed First Semester Syllabus

THERMODYNAMICS & CHEMICAL EQUILIBRIUM CODE MCH 101

Unit I

First Law of Thermodynamics: Work and heat, Internal energy, Conservation of energy, The First Law and its universal applications, System and surroundings, Exact and inexact differential, Heat capacities, Isolated systems, Adiabatic versus isothermal processes; First thermodynamic functions, Enthalpy and its calculations, Thermodynamic relationships; Temperature, pressure, and volume variations of enthalpy and internal energy, Isoenthalpic process, Joule–Thompson effect; Chemical applications of the First Law, Thermo chemistry, Standard quantities of formation, Zeroth law of thermodynamics.

Unit II

Thermo chemistry: Change of internal energy in a chemical reaction; Relation between heat of reaction at const volume and const pressure; bond energies, Application of bond energy; Hess law of const heat summation and application of Hess Law, Determination of enthalpies of reactions and standard enthalpy change; The Kirchhoff equation.

Unit III

Second Laws of Thermodynamics: Concept of spontaneity; Conversions of heat to work and vice versa; Carnot cycle; Thermodynamic formulation of absolute temperature; Carnot, Clausius and Kelvin formulation of entropy; Reversibility; Criteria of spontaneity and entropy increase in isolated systems, Entropy calculations for specific processes, Trouton's rule. The Nernst heat theorem,

Unit IV

Third Laws of Thermodynamics: The Third Law; Unification of the First and Second Laws: the fundamental equation, Real gases: the fugacity, Fugacity versus pressure.

Unit V

Chemical Equilibrium: Spontaneity of chemical reactions; Gibbs energy minimum; Perfect gas equilibria; Gibbs free energy change for the reaction and chemical quotient; Expression for thermodynamic equilibrium constant; Equilibrium Calculations, Response of equilibrium to pressure, volume and temperature, The van't Hoff equation.



Books Recommended:

- 1) Ila Prigofine, *Thermodynamics of Irreversible Processes*.
- 2) S. N. Blinder *Advanced physical Chemistry*, The Macmilan Company.
- 3) R. C. Srivatsava, S. Saha and A. K. Jain, *Thermodynamics*, Prentice-hall, India

ORGANIC REACTION MECHANISM AND STEREOCHEMISTRY CODE MCH 102

Unit I

Stereochemistry: Configuration nomenclature; Axial and planar chirality and helicity; Topicity and prostereoisomerism; Racemic modification and optical purity; Conformational analysis of acyclic, cyclic, heterocyclic and steroidal systems; Effects of conformation on reactivity; Regioselectivity, stereospecificity and stereoselectivity; Asymmetric synthesis (including enzymatic and catalytic nexus); Enantio- and diastereoselective synthesis.

Unit II

Nucleophilic Substitution Reactions: Nucleophilic substitution at saturated carbon – SN1, SN2 and related mechanisms; Parameters influencing reaction rates; Neighboring group participation by π and σ bonds; Anchimeric assistance; Synthetic applications of nucleophilic substitution involving alcohols, thiols, amines and hydrides; Aromatic nucleophilic substitutions.

Structure and Reactivity: Linear free energy relationships; Hammett and Taft equations; σ and ρ parameters; Aromaticity in benzenoid and non-benzenoid compounds, antiaromaticity and homoaromaticity; Huckel rule, n-annulenes, heteroannulenes, fullerenes, cryptates.

Unit III

Elimination Reactions: Mechanism and stereochemistry of different types of elimination reactions; Effects of substrate structure, attacking base, leaving group and medium; Formation of other double bonds (C=N, C=O) and triple bonds by elimination reactions; Mechanism and orientation in pyrolytic elimination.

Addition to Carbon-Carbon Multiple Bonds: Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals; Regio- and chemoselectivity; Orientation and reactivity; Addition to cyclopropane and carbon-heteroatom multiple bonds; Hydroboration, alkylation, epoxidation and hydroxylation.

Unit IV

Carbonyl and Related Groups: Reactivity of carbonyl group, 1,3-dithiane reactivity, Umpolung effect; Ring expansions; Homologation and dehomologation of carbonyl compounds; Nucleophilic addition of heteroatoms (N,O,S); Conjugate addition reactions, Acylation of



carbonyl carbon; Carbonyl cyclizations and cleavages; Carboxylic acids and derivatives, decarboxylation reactions.

Unit V

Pericyclic Reactions: Main features of pericyclic reactions; Woodward-Hoffman rules, correlation diagram and FMO approaches; Electro-cyclic reactions – conrotatory and disrotatory motions for $4n$ and $4n+2$ systems; Cycloadditions – antarafacial and suprafacial additions, [2+2] and [4+2] reactions ($h\nu$ and Δ), 1,3-dipolar cycloadditions and chelotropic reactions; Sigmatropic $[i,j]$ shifts of C-H and C-C bonds; Sommelet-Hauser, Claisen, thio-Claisen, Cope and aza-Cope rearrangements.

Books recommended:

1. S. H. Pine., *Organic Chemistry*, McGraw-Hill Bool.
2. J. March. *Advanced Organic Chemistry: Reactions, Mechanisms and Structure*.
3. Wiley Student Edition, John Wiley & Sons Asia Pte. Ltd.

INORGANIC CHEMISTRY-I CODE MCH 103

Unit I

Chemistry of transition elements: General characteristic properties of transition elements; Coordination chemistry of transition metal ions; stereochemistry of coordination compounds; Interpretation of electronic spectra including charge transfer spectra; Metal clusters.

Unit II

Metal-Ligand bonding: Crystal field theory; CFT for octahedral, tetrahedral and square planar complexes; John-Teller effect, spectro chemical series, limitation of crystal field theory; Molecular orbital theory for octahedral, tetrahedral complexes, Ligand field theory.

Unit III

Hard & Soft Acid Base: Hard and soft acid base, Principle, theoretical basis of hardness and softness; Lewis-acid Base reactivity approximately; Donor acceptor number, applications of HSAB Concept.

Unit IV



Inorganic Polymers: Homo and hetero catenated inorganic polymers; Polyphosphazenes: synthetic routes and bonding features, polymerization of organo/organo-metallic substituted phosphazenes and their applications, synthesis and characterization of polysilanes. Polysiloxanes: synthetic routes via anionic and cationic polymerization and properties.

Unit V

Nuclear Chemistry: Nuclear reaction; Types of reaction, fission & fusion; Fission products & fission yield, Radioactive' tracer techniques.

Books Recommended:

- 1) A. F. Wells, *Structural Inorganic Chemistry* – 5th edition (1984)
- 2) J H Huheey, *Inorganic Chemistry - Principles, structure and reactivity*, Harper and Row Publisher, Inc. New York (1972)
- 3) J. D. Lee, *Concise Inorganic Chemistry*, Elbs with Chapman and Hall, London.

ADVANCED BIOORGANIC CHEMISTRY CODE MCH 104

Unit I

Cell Structure and Functions: Structure of prokaryotic and eukaryotic cells; Intracellular organelles and their functions; Comparison of plant and animal cells; Overview of metabolic process catabolism and anabolism; ATP – the biological energy currency; Enzymes, Structure activity and reactions; Catalyzed determination of active site; Inhibition mechanism chemical transformations using enzyme.

Unit II

Carbohydrates: Conformation of monosaccharide's; Structure and functions of important derivatives of monosaccharides like glycosides; Deoxy sugars, myoinositol, amino sugars; N acetyl muramic acid, sialic acid and disaccharides polysaccharides, Structural polysaccharides- cellulose and chitin; Storage polysaccharides - starch and glycogen; Ascorbic acid,

Unit III

Carbohydrate metabolism: Kreb's cycle; Glycolysis, Glycogenesis and Glycogenolysis, Pentose phosphate pathway.

Unit IV

Lipids: Fatty acids, Essential fatty acids; Structures and function of triglycerides; Glycerophospholipids; Sphingolipids, Cholesterol, Bile acids, Prostaglandins; Lipoproteins composition and function; Properties of lipid aggregates– micelles, Bilayers, Liposomes and



their possible biological functions; Biological members; Fluid mosaic model of membrane structure.

Unit V

Nucleic Acids: Purine and Pyrimidine of nucleic acids; Base pairing via H – bonding; Structure of ribonucleic acids (RNA) and deoxyribonucleic acid (DNA); Double helix model of DNA and forces responsible for holding it; Chemical and enzymatic hydrolysis of nucleic acids; The chemical basis for heredity, An overview of replication of DNA; Transcription, Translation and genetic code; Chemical synthesis of mono and poly nucleosides.

Books Recommended:

1. **A. L. Lehinger**, *Principles of Biochemistry*, Worth Publications.
2. **L. Stryer**, W. H. Freeman *Biochemistry*.
3. **J. David Rawn**, Neil Patterson *Biochemistry*.
4. **Voet and Voet**, John Wiley *Biochemistry*.
5. **E. E. Conn and P. K. Stumpt**, John Wiley. *Outlines of Biochemistry*.

ENVIRONMENTAL CHEMISTRY CODE MCH 105

Unit I

Air Pollution & Water pollution: Sources and sinks of gases pollutants; Classification & effects of air pollutants on living and nonliving things; Air pollution problems in India; Pollution problems in industrial area; Global air pollution problems, green house effect, acid rain, ozone depletion and their consequences on Environment, Major air pollution disasters, Types, sources and classification of water pollutants, Industrial water pollution; Constituents of aquatic Environment; Oxygen contents of water and aquatic life; Oxygen electrode and its use; Mercury pollution and estimation of organomercurials; Industrial water; Effects of water pollutants on life and Environment.

Unit II

Method of control of air pollution & water pollution: Method of control of air pollution; Electrostatic precipitation wet & dries scrubber; Filters, gravity and cyclonic separation; Adsorption, absorption and condensation of gaseous effluent; Method of control of water pollution; Water and waste water treatment; Aerobic and anaerobic; aeration of water; Principle of coagulation, flocculation, softening, disinfection, demineralization and fluoridation.

Unit III



Sampling & analysis of air and water pollutants: Methods of sampling gaseous; Liquid and solid pollutants; Analysis of - CO, CO₂, NO₂, SO₂, H₂S, CO₂; Analysis of toxic heavy metals - Cd, Cr, As, Pb, Cu; Separation of Co, Cu, Mg, Mn, Fe; Analysis of total cationic and anionic burdens of water; Pesticide, residue analysis soil pollution; Sources of pesticides residue in the Environment; Pesticides degradation by natural forces; Effect of pesticide residue on life; Analytical techniques for pesticides residue analysis.

Unit IV

Radiation pollution: Classification & effects of radiation; Effects of ionizing radiation on man; Effects of non ionizing radiation on life; Radioactivity and Nuclear fallout; Protection and control from radiation.

Unit V

Environmental toxicology: Chemical solutions to environmental problems biodegradability; Principles of decomposition better industrial processes; Bhopal gas tragedy, Chernobyl, Three Mile Island, Sewozo and Minamata disasters.

Books recommended:

1. A.K. De ,*Environmental Pollution*.
2. Wark & Werner *Air Pollution*.
3. S.P. Mahajan *Environmental Pollution Control in Process Industries*
4. B.K. Sharma & H.Kaur *Environmental Pollution*.
5. P.K. Trivedi *Introduction to Air Pollution*.

INDUSTRIAL MANAGEMENT CODE MCH 106

Unit I

General Management: Principles of scientific management; Brief description of managerial functions.

Business Organizations: Salient features of sole Proprietorship, Partnership, Joint stock Company – private and public limited.

Unit II

Financial Management: Concept of interest; Compound interest; Present worth method, Future worth method. Depreciation – purpose, Types of Depreciation; Common methods of depreciation - Straight line method, Declining balance method, Sum of the years digits method.



Unit III

Personnel Management: Leadership and motivation; Staff role of the personnel department; Personnel functions; Organizational structure.

Human Resource Planning: Reasons for human resource planning; Planning process; Goals and plans of the organizations; Implementation programs; Brief description of recruitment, selection, placement, performance appraisal, career development, promotion, transfer, retirement, training and development, motivation and compensation.

Unit IV:

Material Management: Importance; Definition; Source selection, Vendor rating and Value analysis; Scope of MRP. Inventory Control: Definition, objectives, reasons, and requirements for inventory management; Inventory methods - ABC Analysis, VED. Economic Order Quantity models - Basic EOQ, Economic production run size and Quantity discounts.

Unit V

Marketing Management: Product life cycle; Channels of distribution; Advertising & sales promotion; Market Research

Managing Marketing Effort: Marketing implementation and evaluation; Appraisal and prospects

Books Recommended:

1. K. K. Ahuja, *Industrial Management*, Vol. I & II, Khanna Publisher.
2. E. Paul Degarmo, John R. Chanda, William G. Sullivan, *Engg Economy*, Mac Millan Publishing Co.
3. Philip Kotler, *Principles of Marketing Management*, Prentice Hall.
4. P. Gopalakrishnan, M. Sundaresan, *Materials Management*, Prentice Hall of India Ltd.

ORGANIC CHEMISTRY LAB CODE MCH 107

List of Experiments

1. To perform Oxidation: Adipic acid by chromic acid oxidation of Cyclohexanol.
2. To perform Aldol condensation: Dibenzal acetone from Benzaldehyde.



3. To perform Sandmeyer reaction: p- Chlorotoulene from p-Toluidine.
4. To perform Aromatic Electrophonic substitutions: Synthesis of p-Nitroaniline and p-Bromoaniline.
5. Determination of neutralization equivalent of organic acids Separation & identification of compounds having one or more functional groups.
6. Preparation characterization of two & three steps organic compounds solution of caffeine from tea leaves.

M.Sc. Chemistry Second Semester Syllabus

CHEMICAL KINETICS AND REACTION DYNAMICS CODE MCH 201

Unit I

Chemical Kinetics: Basic concepts: reaction order; Molecularity; Rate laws; Reaction mechanisms: time dependence of reactance; Intermediates and products; Rate constants: Arrhenius rate law and deviation; Activation energy versus entrance barriers; Experimental determination of rate constants.

Unit II

Theories of reaction rates: The collision theory of bimolecular gaseous reaction; Activated complex theory; The Lindemann theory of unimolecular reaction; Kinetics of complex reactions.

Unit III

Potential energy surfaces: Two dimensional representation; Features on potential energy surfaces; Experimental probing of potential energy surfaces and reaction mechanisms; Molecular dynamics calculations.

Unit IV

Theories of Unimolecular Gaseous reactions: Partition functions and chemical equilibrium; Transition state theory; Application of transition state theory to unimolecular decomposition; Hinshelwood theory; The RRK Theory; RRKM theory.

Unit V



Marcus theory of Electron transfer reaction: Statistical mechanical derivation of the rate constant of a gaseous bimolecular reaction using TST

Books Recommended:

1. R.D. Levine, R.B. Bernstein *Molecular Reaction Dynamics and Chemical Reactivity* (Oxford, New York).
2. Paul L. Houston *Chemical Kinetics and Reaction Dynamics*, (Mc Graw Hill, New York).
3. G. Arfken *Mathematical Methods for Physicists*, (Academic Press, New York).
4. J.I. Seinfeld, J.S. Francisco, W.L. Hase *Chemical Kinetics and Dynamics*

INORGANIC CHEMISTRY- II
CODE MCH 202

Unit I

Chemistry of non – Transition elements: General discussion on the properties of the non-transition elements; Special features of individual elements; Synthesis, properties and structure of halides and oxides of the non-transition elements; Polymorphism in carbon, phosphorous and sulphur; Synthesis, properties and structure of boranes, silicates, nitrogen compounds; Structure and bonding in oxy-acid of nitrogen, phosphorous, sulphur and halogens, inter-halogens, pseudo halides.

Unit II

Organo metallic Chemistry of transition elements: Ligand captivity; Electron count for different types of organ metallic compounds; 18 and 16 electron rule exceptions; Synthesis, structure and bonding, organ metallic reagents in organic synthesis and in homogeneous catalytic reactions (Hydrogenation and hydroformylation, isomerisation).

Unit III

Photochemistry of Metal Complexes and Metal–Metal Multiple Bonds: Excited states, ligand field states, charge-transfer states and Thexi states; Phosphorescence and fluorescence; Photochemical reactions: substitution and redox reactions of Cr(III) and Ru(II) complexes; Applications: synthesis and catalysis, chemical actinometrical and photo-chromism.

Unit IV

Nanomaterials:

General introduction to nanomaterials and emergence of nanotechnology; synthesis of nanoparticles of gold, palladium, platinum, and silver; Synthesis of nanowires and Nano rods;



electroplating and electrophoresis deposition, Thin films: Chemical vapour deposition and Atomic layer deposition techniques; Carbon fullerenes and nanotubes. Single walled and multiwalled carbon nanotubes, Applications of nanoparticles.

Unit V

Synthesis, properties and structures of carboranes, silicones, phosphazenes, zeolites and clay; polymorphism of carbon, phosphorus and sulphur

Books recommended:

1. R. C. Mehrotra & A. Singh. *Organometallic Chemistry: A Unified Approach* (2nd edn.), New Age International (2000).
2. F. A. Cotton & G. Wilkinson. *Advanced Inorganic Chemistry* (5th edn.), John Wiley (1988).
3. D. M. Roundhill. *Photochemistry and Photophysics of Metal Complexes*, Plenum Press.

COORDINATION CHEMISTRY CODE MCH 203

Unit I

Theories of Metal - Ligand bonding: Molecular Orbital treatment; Octahedral (with and without pi bonding) tetrahedral and square planer complexes in a qualitative manner; Comparison of theories of bonding, VBT, CFT, LFT and MOT.

Unit II

Structural studies of coordination compounds: Compounds of first transition series elements, with respect to their electronic spectra, magnetic & thermal properties (DTA, TGA).

Unit III

Magneto Chemistry: Diamagnetic correction, single & multielectron system; Types of the magnetic behavior; Diamagnetism, Para magnetism, Ferro & Ferri, Antiferro and magnetic interaction; The origin of Para magnetism, Magnetic behavior of complexes; Simplification of Van Velck equation; Magnitude of magnetic moments; Determination of magnetic susceptibility by Gouy and Faraday method.

Unit IV

Transition metal complexes & catalysis: Introduction, General Principle; Catalysis by transition metal complexes; Hydrocarbons Oxidation by Molecular oxygen, olefin Oxidation,



olefin polymerization, olefin hydrogenation; Arene reactions catalyzed by metal complexes; Catalysis of condensation polymerization reaction; Current and feature trend in catalysis.

Unit V

Mixed Ligand complexes: Stabilities of ternary complexes; Dynamics of formation of ternary complexes reaction of Coordination ligand in ternary complexes; Mimicking reactions in biological systems; Enzyme models; Amino acids ester hydrolysis; Peptide synthesis & hydrolysis; Detarbodylation of β keto acids.

Books recommended:

1. Jones: *Elementary Coordination Chemistry*. J. Wiley.
2. Graddon: *Introduction to Coordination Chemistry*. J. Wiley.
3. Drago: *Physical methods of Inorganic Chemistry*. J. Wiley.
4. Graddon: *Introduction to coordination Chemistry*, Parasmom.
5. Lewis and Wilkins: *Coordination Chemistry*. J. Wiley.

BIOINORGANIC CHEMISTRY CODE MCH 204

Unit I

Bioinorganic Chemistry of Alkali and Alkaline Earth Metals: Essential and trace elements in biological systems; Structure and functions of biological membranes; mechanism of ion transport across membranes; Sodium pump; Ionophores: valinomycin and crown ether complexes of Na^+ and K^+ ; ATP and ADP; Photosynthesis: chlorophyll a PS I and PS II; Role of calcium in muscle contraction; Blood clotting mechanism and biological calcification.

Unit II

Bioinorganic Chemistry of Iron and Copper: Iron-sulphur proteins: Rubredoxin and ferredoxins; Metalloporphyrins; Heme proteins: hemoglobin, Structure and Mechanism of hemoglobin, myoglobin and cytochrome c; Non-heme proteins: hemerythrin and hemocyanin.

Unit III

Nitrogen Fixation, Metal poisoning and there treatment: Nitrogen in biosphere; Nitrogen cycle; Role of micro-organisms in nitrification; Nitrogen fixation in soils; Metal poisoning and drug action of Inorganic complexes compounds; Metal poisoning, treatment by using chelating agent, mercury, lead & cadmium poisoning & treatment; Platinum complexes in treatment of cancer. metal deficiency.



Unit IV

Trace Metals in Plant Life: Micronutrients present in soil and role in plant life; Biodegradation of minerals by bacteria and its applications in treatment of soil and water pollution.

Unit V

Medicinal chemistry: Concept of drug; Lead compound and lead modification; Structure activity relationship (SAR); Quantitative structure-activity relationship (QSAR); Theories of drug activity – occupancy theory, rate theory, induced fit theory; Concept of drug receptors – elementary treatment of drug receptor interactions; Physicochemical parameters – lipophilicity, partition coefficient, electronic ionization constants, steric; Factors affecting modes of drug administration, absorption, metabolism and elimination; Significance of drug metabolism in medicinal chemistry.

Books Recommended:

1. Eichhorn: *Inorganic Biochemistry* : Vol I , 2 Elsevier.
2. Ochiai: *Bioinorganic Chemistry*: Allyn & Bacon Burton.
3. Williams: *an Introduction to Bioinorganic Chemistry*, C.C. Thomos Spring III.
4. Wallace: *Decade on synthetic chelating agent in Inorganic plant nutrition*, Wallace.
5. Williams: *Metals in Life*.
6. Zagic: *Microbial Biogeochemistry*, Academic press.
7. Ahuja: *Chemical Analysis of the Environment*, Plenum press.

ANALYTICAL CHEMISTRY CODE MCH 205

Unit I

Ultraviolet and visible spectrophotometry (UV-VIS): Introduction, Beer Lambert's law; Instrumentation applications of UV vs, Infrared Spectroscopy (IR); Introduction, instrumentation, sampling technique, selection rules, types of bonds, absorption of common functional groups; Factors affecting frequencies & applications.

Unit II

Nuclear Magnetic Resonance (NMR): Magnetic and nonmagnetic nuclei; Larmor frequency; Absorption of radiofrequency, Instrumentation (FT-NMR); Sample preparation, chemical shift, spin-spin coupling, coupling constant, applications to simple structural problems; Mass spectroscopy (MS) - Principle, working of mass spectrometer (double beam); Formation of



different types of ions, fragmentation of alkanes, alcohols and ketones, simple applications; Simple structural problems based on IR, UV and MS.

Unit III

Nephelometry and Turbidometry: Introduction, Theory, Instruments, working and Applications, Radiochemical Analysis, NAA: Scintillation counter and GM counter.

Unit IV

Atomic Absorption Spectroscopy: Introduction, Principal, Difference between AAS and FES; Advantages of AAS over FES, Advantages and disadvantages of AAS; Instrumentation; Single and double beam AAS, Detection limit and sensitivity, Interferences applications.

Unit V

Inductively coupled Plasma Spectroscopy: Introduction, Nebulisation Torch, Plasma; Instrumentation; Interferences; Applications

Books Recommended:

1. Willard, Merrit, Dean and Settle *Instrumental Methods of analysis*.
2. R.M. Silverstein and G.C. Bassler *Spectroscopic identification of organic compounds*.
3. D.H. Williams and I. Fleming *Spectroscopic methods in organic chemistry*.
4. V.M. Parikh *Absorption spectroscopy of organic molecules*.
5. P.S. Kalsi *Applications of spectroscopic techniques in Organic chemistry*.

ORGANISATIONAL BEHAVIOUR CODE MCH 206

Unit I

Introduction: Concept, Nature, Characteristics, Models of Organizational Behaviour, Management Challenge, Organizational Goal. Global challenges and Impact of culture.

Unit II

Perception: Concept, Nature, Process, Importance, Attitudes and Workforce Diversity



Personality: Concept, Nature, Types and Theories of Personality Shaping, Learning: Concept and Theories of Learning.

Unit III

Motivation: Concepts and Their Application, Principles, Theories, Motivating a Diverse Workforce.

Leadership: Concept, Function, Style and Theories of Leadership-Trait, Behavioural and Situational Theories, Analysis of Interpersonal Relationship

Unit IV

Organizational Power and Politics: Concept, Sources of Power, Approaches to Power, Political Implications of Power, Knowledge Management & Emotional Intelligence in Contemporary Business Organization

Organizational Change: Concept, Nature, Resistance to change, Managing resistance to change, Implementing Change.

Unit V

Conflict: Concept, Sources, Types, Functionality and Dysfunctional of Conflict, Classification of Conflict Intra, Individual, Interpersonal, Intergroup and Organizational, Resolution of Conflict, Stress: Understanding Stress and Its Consequences, Causes of Stress, Managing Stress.

Books Recommended:

1. Dwivedi, D. N, *Managerial Economics*, Vikas Publishing House.
2. Varshney & Maheshwari, *Managerial Economics*, Sultan Chand & Sons.
3. Robbins Stephen P., *Organizational Behavior* Pearson Education
4. Hersey Paul, “*Management of Organizational Behavior: Leading Human Resources*” Blanchard, Kenneth H and Johnson Dewey E., Pearson Education
5. Khanka S. S. “*Organizational Behavior*”

INORGANIC LAB CODE MCH 207

List of Experiments:

1. To perform quantitative separation and determination of the following pairs of metal ions using gravimetric and volumetric methods:
 - (i) Ag⁺ (gravimetrically) and Cu²⁺(Volumetrically)
 - (ii) Cu²⁺ (gravimetrically) and Zn²⁺(Volumetrically)
 - (iii) Fe³⁺ (gravimetrically) and Ca²⁺(Volumetrically)
 - (iv) Mg²⁺ (gravimetrically) and Ca²⁺(Volumetrically)



2. To determine separation of a mixture of cations/anions by paper chromatographic technique using aqueous/nonaqueous media.

(i) Pb^{2+} and Ag^+ (aqueous and non-aqueous media)

(ii) Co^{2+} and Cu^{2+} (non-aqueous medium)

(iii) Cl^- and I^- (aqueous-acetone medium)

(iv) Br^- and I^- (aqueous-acetone medium)

Books Recommended:

1) A. I. Vogel, *A text book of Quantitative Inorganic Analysis*

2) W. G. Palmer *Experimental Inorganic Chemistry*

