UNIT - I

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.

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, Tuning 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
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 - I Context, Concept & Boundaries
The changing social context & emerging issues, the concept & function 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.
Unit – I Production Design

Process planning, plant capacity, capacity planning, make or buy decisions, use of cross-over chart for selection process, Plant location: Factors 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, Breakdown 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.
Unit I

Concept and objective of sales management; design 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; Relationship 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 & efficiency 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 feedback, 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

Unit III  Transportation Model

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

Unit IV  Project Management

Unit V  Forecasting: Types of forecasts. Measures of forecast accuracy, time series forecasting models, causal forecasting methods, monitoring and controlling forecast, queuing theory, decision theory, Markov Analysis.
UNIT - I

UV-Visible Spectroscopy


Photoelectron Spectroscopy

General theory and application of UV and X-Ray photoelectron 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


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 1H NMR spectra. Application in quantitative analysis. Spectroscopy of other important nuclei. 13C, 19F, 31P, 31P

13C NMR: Historical Development, various terms used in 13C NMR. Application of 13C 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


Mass Spectrometry (Fe & Sn)

General theory, instrumentation and important applications of Mass Spec Spectroscopy.
UNIT I

Polymer Rheology and Morphology
Introduction: stress and strain, ideal elastic solid, Newtonian and non-Newtonian fluids, apparent viscosity, the power law, low molecular hole concept, Weissenberg effects, viscoelastic properties of fluid, melt fracture and irregular, time-dependent flow, viscoelastic behaviour, mechanical model of a viscoelastic material, relaxation 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, flex cracking resistance, abrasion resistance, impact resistance.

UNIT II

Polymer Processing
Compression moulding, casting, extrusion, Fiber-spinning, injection moulding, thermoforming

Polymer Products
Belt, 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

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
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<tbody>
<tr>
<td>(1) Activators</td>
<td>(2) Accelerators</td>
</tr>
<tr>
<td>(3) Blowing agents</td>
<td>(4) Softeners</td>
</tr>
<tr>
<td>(5) Pigments</td>
<td>(6) Tactifiers</td>
</tr>
<tr>
<td>(7) Release agents</td>
<td>(8) Reclaimed rubber</td>
</tr>
<tr>
<td>(9) Tactics</td>
<td>(10) Ground crumb</td>
</tr>
<tr>
<td>(11) Mineral rubber</td>
<td>(12) Retarders</td>
</tr>
</tbody>
</table>

Fillers


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

Reinforcing and Extending Fillers: Introduction manufactures characteristics and application of some representative fillers.
UNIT V

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

Analysis & Testing of Polymers
Thermal analysis: DSC, TGA, TMA, DTA
UNIT - I

Drugs acting on gastrointestinal disorders

(a) Agents for control of gastric acidity and treatment of peptic ulcers: Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Ranitidine, Sodium bicarbonate, Magnesium Hydroxide, Aluminum Hydroxide Gel, Sucralfate.

(b) Laxatives, Antidiarrheics and other Gastrointestinal drugs.

(c) Drugs for constipation and Diarrhoeas: 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, Digoxin, Clonidine, Hydralazine, Methylxanthines, Nitroglycerin, Isosorbide, Prenylamine, Disopyramide Phosphate, Procainamide Hydrochloride.

b) Hematopoiesic Agents: Growth factors, minerals, anticoagulants, thrombolytic and antiplatelet 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 Chlorothiazide, Hydrochlorothiazide, Acetazolamide, Chlorothiazide, Furosemide, Spironolactone, Moxonidine.

c) Antidiuretics: Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Lypressin, Amiloride, Carbamazepine.
UNIT IV
(a) Drugs of Arthritis & Gout: Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Gold, d-Penicillamine, Chloroquine, Sulfasalazine, NSAIDs, Colchicine, Allergics.
(b) Drugs of Cough and Bronchial Asthma: Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Codeine, dextromethorphan, bromhexine, ambroxol, guaiphenesin, isoprenaline, salbutamol, Theophylline, Aminophylline, Atropin methonitate, 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, Monobenzon), Sunscreens, Drugs for acne vulgaris (Benzoyl peroxide, Retinoic acids, Antibiotics, Isotretinoin).
c. Antiviral Drugs: Classification, pharmacology, mode of action, adverse effects, synthesis and structure activity relationship of Acyclovir, Amantadine hydrochloride, Zidovudine.