

**Punyashlok Ahilyadevi Holkar Solapur  
University, Solapur**



NAAC Accredited-2015  
'B' Grade (CGPA 2.62)

**Name of the Faculty: Science & Technology**

**CHOICE BASED CREDIT SYSTEM**

**Syllabus: Five Year Integrated M. Tech. (Cosmetic  
Technology)**

**Name of the Course: M.Tech. IV (Semester- VII &VIII)**

**(Syllabus to be implemented from w.e.f. June 2021)**

# Punyashlok Ahilyadevi Holkar Solapur University, Solapur

## SCHOOL OF TECHNOLOGY

### Syllabus of Five Year Integrated M. Tech. (Cosmetic Technology) (Choice Based Credit System)

- 1) Title of the course:** Integrated M. Tech. (Cosmetic Technology).
- 2) Duration of course:** Five years.
- 3) Pattern:** Semester and Credit system.
- 4) Eligibility:** For Five Year Integrated M. Tech. Course in Cosmetic Technology following candidates are eligible.
  - Students with H.S.C. with Science Stream.
  - Students with B.Sc.(B group) subject: Chemistry, Zoology, Botany, Microbiology, Biotechnology, Biochemistry, Bioinformatics etc. are eligible for the direct admission to 3<sup>rd</sup> year after successful completion of Orientation/ Induction program. Orientation/Induction program will be conducted by the School in V sem. of third year.
  - Students with D.Pharm are eligible for the direct admission to 2<sup>nd</sup> year.
  - Students with B.Pharm are eligible for the direct admission to 3<sup>rd</sup> year.
  - Students after completion of fourth year are eligible to award B.Tech. degree.
- 5) Strength of the Students:** 30

Five Year Integrated M. Tech. (Cosmetic Technology) consists of 250 credits.

#### Five Year Integrated M. Tech. (Cosmetic Technology)

Semester	No. of Papers/ Practical's	Marks	Credits
<b>Semester VII</b>			
• Theory Papers	05	500	20
• Practical Paper	02	200	08
• Seminar/Tutorial/ Industrial Visit/ Field Tour	01	25	01
<b>Semester VIII</b>			
• Theory Papers	05	500	20
• Practical Paper	02	200	08
• Dissertation /Implant/ Review	01	25	01
<b>Total marks and credits for Course</b>		<b>1450</b>	<b>58</b>

Fourth Year syllabus (according to the Semester Pattern Examination) to be effective from the Academic Year 2021-22

Semester	Code	Title of the Paper	Semester Examination			L	T	P	Credits
			Theory (UA)	CA	Total				
Sem-VII		Hard Core							
	HCT7.1	Perfumes & Colours	70	30	100	4	--	--	4
	HCT7.2	Cosmetic Technology- V	70	30	100	4	--	--	4
	HCT 7.3	Quality Assurance Techniques	70	30	100	4	--	--	4
	HCT 7.4	Herbal Cosmetics-I	70	30	100	4	--	--	4
		Soft Core (Any one)							
	SCT 7.1	Organization & Management of Industries	70	30	100	4	--	--	4
	SCT 7.2	Material Management & Inventory Control	70	30	100	4	--	--	4
		Seminar/Tutorial/ Industrial Visit/ Field Tour	---	25	25	--	1	--	1
	HCP 7.1	Practical-I(HCT 7.1 &HCT 7.2)	70	30	100	--	--	06	4
	HCP 7.2	Practical-II (HCT 7.3 &HCT 7.4)	70	30	100	--	--	06	4
		Total for Semester- VII	490	235	725	--	--	--	29
Sem-VIII		Hard Core							
	HCT 8.1	Colours in Cosmetics	70	30	100	4	--	--	4
	HCT 8.2	Cosmetic Technology- VI	70	30	100	4	--	--	4
	HCT 8.3	Cosmeceuticals Microbiology	70	30	100	4	--	--	4
	HCT 8.4	Herbal Cosmetics-II	70	30	100	4	--	--	4
		Soft Core (Any one)							
	SCT 8.1	Management and Organizational Behavior	70	30	100	4	--	--	4
	SCT 8.2	Plant Design	70	30	100	4	--	--	4
		Dissertation /Implant/ Review	---	25	25	--	1	--	1
	HCP 8.1	Practical-III (HCT 8.1 &HCT 8.2)	70	30	100	--	--	06	4
	HCP 8.2	Practical-IV(HCT 8.3 &HCT 8.4)	70	30	100	--	--	06	4
		Total for Semester- VIII	490	235	725	--	--	--	29

L=Lecture T=Tutorials P=Practical UA=University Assessment CA =College Assessment

HCT=Hard Core Theory SCT=Soft Core Theory, HCP=Hard Core Practical

**Additional Skill Course(Swayam/MOOCs):**

<b>Sr.No.</b>	<b>Topic</b>	<b>Semester</b>	<b>No. of Credits</b>
1	Spectroscopic Techniques for Pharmaceuticals and Biopharmaceutical Industries	VII	04
2	Academic and Writing		
3	Analytical chemistry		
4	Entrepreneurship		
5	Drug Delivery: Principles and Engineering		

Successful completion of Swayam/MOOC's course is compulsory for the award of degree. Any one course is to be selected from above mentioned courses.

**Evaluation Scheme:**

Each theory paper will have 100 marks out of which 70 marks will be for Term End examination and 30 marks for Internal Assessment. Practical paper will have 100 marks out of which 70 marks will be for Term End examination and 30 marks for Internal Assessment. The candidate has to appear for internal evaluation of 30 marks and external evaluation (University Examination) of 70 marks for each **theory** paper. The candidate also has to appear for internal evaluation of 30 marks and external evaluation (University Examination) of 70 marks for **practical** paper.

**Internal Evaluation:**

In case of theory papers internal examinations will be conducted by school.

In case of practical paper 05 marks shall be for day-to-day journal and internal examination of will be conducted by the school.

**External Evaluation (End of Term University Examination):****I) Nature of Theory question paper:**

Q.1 Multiple Choice Questions 14

Q.2 A) Answer the following (Any Four) 08

1. 02

2. 02

3. 02

4. 02

5. 02

B) Write Notes on (Any Two) 06

1. 03

2. 03

3. 03

Q.3 A) Answer the following (Any two) 08

1. 04

2. 04

3. 04

B) Answer the following (Any One) 06

1. 06

2. 06

Q.4 A) Answer the following (Any Two) 10

1. 05

2. 05

3. 05

B) Answer the following (Any One) 04

1. 04

2. 04

Q.5 Answer the following (Any two) 14

1. 07

2. 07

3. 07

## **SEMESTER - VII**

### **HCT- 7.1 Perfumes & Colours**

- 1] Specially perfumed products – formulation and processing of:
  - a. Alcoholic fragrance solution
  - b. Emulsified and solid fragrances.
  - c. Solubilized perfumes. (15 L)
  
- 2] Synthetic substances used to formulate different perfumes, their sources, properties and composition of lavender, Rose, Jasmine, violet, Orris, Cypre, Amber, carnation, Muguet, Lilac, Acacia, Cassie, narcissus, Kewda, Mineral water essences. (15 L)
  
- 3] Adaptation and incorporation of perfumes in skin care cosmetic products like creams, lotions, powders, soaps. (15 L)
  
- 4] a) Adaptation and incorporation of perfumes in Hair care cosmetic products like shampoo, hair oils, conditioners, hair colorants and dyes  
b) Incorporation of perfume/ color/ flavor in eye preparations. Nail preparations, Lip and other preparations, tooth paste and baby preparations. (15 L)

#### **Books Recommended:**

- 1 Perfumes, Flavours & Essential oil Industry by- S. B. Srivastava.
- 2 Manufacture of perfumes, cosmetics and detergents – By Giriraj Prasad.
- 3 Perfumes: History & Chemistry Vol-I- Dr.D.D.Wasule
- 4 Cosmetic: Science & Technology – By Sagarin.
- 5 Industrial Pharmacy – By Leon Lachman.
- 6 An introduction to perfumery – by Tony Curtis and David Williams
- 7 New cosmetic science –by T Mitsui

## HCT- 7.2 Cosmetic Technology- V

### 1] Shampoos :

Introduction, Detergency, Evaluation of detergents as shampoo bases, raw materials for shampoos, Principle and auxiliary surfactants, formulation of shampoo, clear liquid shampoos, Aerosol shampoos, Acid balanced Shampoos, safety of shampoos.

(15 L)

### 2] Hair setting lotions, sprays and dressings:

Use and purpose of hair dressings, women hair dressings, setting lotions, heated curlers and blow drying, hair sprays, Men's hair dressing – formulation brilliantines, non oily fixatives, aerosols, emulsion gels.

(15 L)

### 3] I) Hair Tonics & Conditioners: Introduction – formulation of medicated hair tonics, conditioners, evaluation of conditioning, hair thickeners, rinses.

#### II) Hair strengtheners:

Introduction, hot comb method, caustic preparations, chemical hair reducing preparations.

(15 L)

### 4] Hair colorants:

Introduction – Hair colouring systems, characteristics of an ideal hair colourants, the process of hair colouring. Temporary hair dyes dyestuffs – commercial, semi permanent products and their formulations, permanent hairdyes, Bases couplers of modifiers, formation of colour in the hair. Toxicity and dangers of Para dyes. Formulation of permanent hair dyes, other dyes for hair – Aromatic polyhydroxy compounds, vegetable hair dyes, metallic hair removers, Bleaching and lightening.

(15 L)

#### **Books recommended:**

1. Text Book of Cosmeticology – by Harry's
2. Cosmetic Science and technology – Sagarin.

### HCT- 7.3 Quality Assurance Techniques.

1] Introduction:

- I) Concept: Quality Assurance, Good Manufacturing Practice and Quality Control.
- II) Documentation: BMR, Validation and its types, Process Validation, Qualification, SOP, Change Control, Deviation (15L)

2] Theoretical aspects, basic instrumentation and application of following Technique:

- I) Separation Technique: Gel Filtration, HPLC, HPTLC and GC.
- II) Spectroscopy Technique: IR, NMR, Mass.
- III) Light scattering method: Nephelometry and Turbidimetry. (15L)

3] Stability Testing –Role of stability testing, Stability testing guidelines, stability testing under different climatic zones and condition and determination of shelf life.

- Study of Rheological properties of semisolid preparation. (15L)

4] Evaluation of finished products e.g. Shampoos, Tooth pastes, Sun screen preparation, lipsticks, Soaps, Skin creams, traditional cosmetics, face wash. (15L)

#### Books recommended:

1. A.O.A.C. (Association of official analytical collaboration- International )
2. Badlsametal : Cosmetic Science & Technology Vol. I,II,III, Ed.: Wiley Itervcine.
3. W. A. Poucher: Perfumes, Cosmetics & Soaps Vol. I,II,III, Ed.: Chapman & Hall.
4. Indian Standard Institution Booklets.
5. Booklet: Pharmaceutical Analysis.
6. A.H. Backett& J. B. Stanlake: Practical Pharmaceutical Chemistry.
7. Garret : Text Book & Pharmaceutical Analysis
8. A. I. Vogel : Quantitative inorganic Analysis.
9. Ewing : Instrumental Method of Chemical Analysis
10. Connoers : Text Book of Pharmaceutical Analysis
11. Higuchi : Pharmaceutical Analysis
12. ISI Booklets.
13. Microbiology by Pelzer & Reed
14. Microbiology by Sally.
15. Principle of Instrumental analysis by D.A.Skoog
16. Instrumental methods of chemical analysis by B.K.Sharma
17. Instrumental methods of chemical analysis by G.R.Chatwal and S.K.Anand
18. Introduction to instrumental analysis by F.D.Brawn
19. Analytical Chemistry by G.D.Christian
20. Classification of cosmetic raw materials and adjuncts IS 3958 of Indian Standard
21. F.V.Smith, J.T.Stewart Text Book of Biopharmaceutical analysis.
22. Indian Pharmacopoeia 2007 controller of publication Govt. of India, New Delhi
23. K.A.Cannors, Text Book of Pharmaceutical analyser

### HCT- 7.4 Herbal Cosmetics-I

- 1] Study of following herbs used in- skin care cosmetic formulations with reference to their biological and geographical sources, chemical constituents, cosmetic or cosmeceuticals uses of following:  
*Aloe, Babhool, Bawchi, chandan, cucumber, Haldi, Ambahaldi, Jeshthamadh, lodra, Neem* (15 L)
- 2] Study of following herbs used in- Hair care cosmetic formulations with reference to their biological and geographical sources, chemical constituents, cosmetic or cosmeceuticals uses of following:  
*Brahmi, Jatamanasi, mehandi, Nagarmotha, ritha, shikekai, kapurkachari.* (15 L)
- 3] Study of storage of herbal actives in cosmetics and store house. (15 L)
- 4] I) Preparation of herbal actives in cosmetics for commercial market.  
II) Future scope of Herbal ingredients in Cosmetic Industry (15L)

#### **Books recommended:**

1. Treas & Erans: Text Book of Pharmacognosy.
2. Claus & Tyler : Pharmacognosy.
3. Nadkarni : Meterial Medica
4. C.S.I.R.: Wealth of India
5. Pharmacognosy by C.K.Kokate, A.P.Purohit, S.B.Gokhale- Nirali Prakashan.

### **SCT- 7.1 Organization & Management of Industries**

1] Marketing Management:

Sales forecasting – Objects, Methods, Budget Preparation, marketing Research, Consumer & Product research. (15 L)

2] Marketing Management: Distribution Techniques – Information system, Distribution budgeting and control system. Consumer research methodology execution and interpretation difference between consumer research and marketing of product, expert promotion, International & Global multi Advertising. Evaluation of salesman's performance. Practical experience – Case studies on related aspects.

(15 L)

3] Plant Location and Layout considerations with special reference to:

Material Procurement and utilization, production, planning and control, requirement and effective utilization of manpower. (15 L)

4] A) Fundamental of Business Organization & Management – Industrial safety.

B) Small scale industries and cottage industries with emphasis on soaps, Detergents and Other Cosmetic Industries. Role of small scale industries in economy development of India. Problems and prospectsof small scale Industries and Industrial safety. (15 L)

**Books recommended:**

1. Fundamental of Business Organization & Management – .Y. K. Bhushan
2. Industrial Management –I. K. Chopda and A. M. Sheikh,
3. Industrial organization and Management SherlekarandSherlekar
4. Industrial Management – R. K. jain,
5. Business Organization and Management – Shukla M. S.
6. Management of Small Scale Industries – Vasant Desai
7. Principles of Management – T. ramaswamy
8. A Text Book of Industrial Organization and Management – S. A. Sherlekar and MallikarjunRao.
9. Entrepreneurial development – C. B. Gupta and N. P. Shrinivasan.
10. Micro & Macro Economic Analysis – C. K. Dewett& Singh
11. Principles of Management – M. L. Seth.
12. Principles of Management – I. C. Dhingra.

## SCT- 7.2 Material Management & Inventory Control

1] Principles of Materials Management and Planning:

Definition, Scope & Functions, Objectives. Classification of Materials-Consumable, Nonconsumable working out quantities required, Forecasting, Budgeting, Availability of materials, Procurement methods. (15 L)

2] A) Purchase Management and Purchase Procedures:

Objectives, Purchase system- Centralised, Decentralised, Local purchase. Legal aspects of purchasing. Purchase Procedures: Selection of Suppliers, Tendering procedures, Analysing bids, Price negotiations, Issue of purchase orders, Rate Contracts.

B) Receipt of Materials:

Inspection of materials, Preparation of defect/Discrepancy Report, Disposal of rejected items, Stocking of accepted items, Accounting of materials. (15 L)

3] Store Management:

Organisation & layout, Functions of Store Manager, Materials handling, Flow of goods/FIFO. Computerisation of inventory transactions, Disposal of scrap/unserviceable materials, Sub-stores in various departments, Physical stock taking. (15 L)

4] Inventory Control:.

Aims & objectives, Scope of Inventory Control, Lead-time, Buffer stock, Reorder level, Two Bin System, EOQ. Techniques of Inventory Control- ABC, VED, Others.

(15 L)

**Books recommended::**

01. Handbook of Materials Management – By P. Gopalkrishnan – Prentice Hall India.

02. Purchasing & Materials Management – By P. Gopalkrishnan – Tata McGraw Hill.

03. Materials & Logistic Management – By Prof. L.C. Jhamb – Everest Publications.

04. Introduction to Materials Management – By Tony Arnold – Peerson.

05. Stores, Management & Logistics – By – P. Gopalkrishnan – Sultanchand & Co., New Delhi.

## **HCP 7.1: Practical I**

### **Perfumes & Colours**

- 1] Preparation of Emulsified fragrances—  
Cream - Formulation, Method & Quantity with ingredients 30/40 gms.  
Lotion - Formulation, Method & Quantity with ingredients 30/40 gms.
- 2] Solid fragrances – 2 Nos (stick)  
Formulation with ingredients ,Method, quantity.
- 3] Perfume creation and matching ; Simple floral fragrance (six)  
Formulation, ingredient & quantities
- 4] Alcoholic fragrance Soln – 2 products
- 5] Colognes – citrus oil
- 6] Toilet waters
- 7] Perfuming of hair oil
- 8] Perfuming of powders - 2 products
- 9] Performance evaluation of perfume

### **Cosmetic Technology- V**

- 1] Shampoos at least two preparation
- 2] Hair setting preparations (Men & Women both)
- 3] Hair tonics
- 4] Hair conditioners
- 5] Hair colour preparations
- 6] Hair waving preparations

## HCP 7.2: Practical II

### Quality Assurance Techniques

- 1] To perform the evaluation of the following cosmetic products like:
  - i. Shampoos – Synthetic, Herbal, Antidandruff (Evaluation parameters-Viscosity Determination, pH Determination, Foam stability, Dirt dispersion, Surface tension Measurement, Determination of % of solid content, wetting time)
  - ii. Hair Dye (Evaluation parameters-pH Determination, Determination of Dye content)
  - iii. Creams (Evaluation parameters-Determination of pH, Rheological property, Spreadability, Determination of type of emulsion: i) Dilution test & ii) Dye solubility test, Saponification value)
  - iv. Face Powders (Evaluation parameters-pH Determination of aqueous suspension, Test for solubility of colour, Determination of fineness, Determination of moisture and volatile matter )
  - v. Tooth Paste (Evaluation parameters-pH Determination, Determination of Particle Size, Determination of Foaming Character, Viscosity Determination, Determination of sharp and edge abrasive particles, Determination of moisture and volatile matter)
  - vi. Tooth Powders (Evaluation parameters-pH Determination, Determination of Particle Size, Determination of Foaming Character, Flow properties, Determination of moisture and volatile matter.)
  - vii. Depilatory (Evaluation parameters-pH Determination, Determination of Calcium Thioglycollate, Thermal Stability)
  
- 2] Raw material analysis of the following raw material as per BIS
  - i. Stearic Acid
  - ii. Zinc Oxide
  - iii. Sodium Lauryl Sulphate
  - iv. Calcium carbonate
  - v. Talc
  
- 3] To study rheological properties of cream, shampoo, powder.

### Herbal Cosmetics-I

- 1] Practical based on- morphological characters, extraction by appropriate method, identification of chemical constituent, and incorporation of extract in suitable formulation of any three herbal ingredients from each (i) and (ii) of following:
  - i) *Aloe, Babhool, Bawchi, Chandan, Cucumber, Haldi, Jeshthamadh, lodra, Neem.*
  
  - ii) *Brahmi, Jatamanasi, Mehandi, Nagarmotha, Ritha, Shikekai, Kapurkachari,*

## SEMESTER – VIII

### HCT- 8.1 Colours in Cosmetics

- 1] Introduction: colour, chroma, light and colour, colour system, relation of colour and emotions, pigment, dye, lake and tonner, hue, value, bleed, tones, highding power, certified colours. (15 L)
- 2] Classification of colours.- Natural (sources, properties), Synthetic based on chemical structures, in organic colours. (15 L)
- 3] Preparation of colour solutions and incorporation of colours in skin care and hair care products including soaps. (15 L)
- 4] Determination of colours and Colour matching of marketed products. (15 L)

### Books Recommended:

- 1 Perfumes, Flavours & Essential oil Industry by S. B. Srivastava.
- 2 Manufacture of perfumes, cosmetics and detergents – By Giriraj Prasad.
- 3 Perfumes: History & Chemistry Vol-I- Dr.D.D.Wasule
- 4 Cosmetic: Science & Technology – By Sagarin.
- 5 Industrial Pharmacy – By Leon Lachman.
- 6 An introduction to perfumery – by Tony Curtis and David Williams
- 7 New cosmetic science –by T Mitsui

## HCT- 8.2 Cosmetic Technology- VI

### 1] Shaving preparation:

Wet shaving preparation, Introduction, Beard softening cream, Lather shaving creams, lather shaving sticks, Aerosoles of shaving foams, Brushless or non lathering creams, Brushless shaving stick, Novel compositions for wet shaving dry – shaving preparation: Introduction pre-electric – shave lotion, collapsible foam pre-electric shave lotion, pre-electric shave gel stick. Pre-electric shave powder.

(15 L)

### 2] Sunscreen, Suntan and Antisunburn Preparations:

Sunlight and the human body – Introduction, tanning – beneficial and adverse effects of sunlight, Solar radiation and its effect on skin Protective mechanism of the skin.

Sunscreen and suntan preparations – Introduction. Sunscreen agents and their formulation. (15 L)

### 3] I) Foot preparations:

Introduction: Influence of foot wear, foot ailments, foot infections, foot care and hygiene, Bathing the feet. Foot powders, foot sprays, foot creams, corn and callus preparations, chilblain preparations, Athlete's foot preparations, other developments.

#### II) Manicure Preparations:

Cuticle remover, nail bleach, nail cream, Nail strengtheners, Nail white, Nail polish, Nail lacquer – Introduction, Ingredients of Nail lacquer, formulation, manufacture of nail lacquer, Base coats and top coats, Enamel remover, Nail drier, plastic finger nails and elongators, Nail mending compositions. (15 L)

### 4] I) Dentifrices :

Basic requirement of a dentifrice. Tooth – paste, Basic structure ingredients, formulation of toothpaste, manufacture of toothpaste, powders, manufacture of toothpowders, solid dentifrices, performance tests Abrasive action, lustre, the toothbrush and tooth brushing, Denture cleansers.

#### II) Mouthwashes :

Introduction : Choice of antibacterial agents, flavouring of mouthwashes, Aerosol mouth freshener.

(15 L)

### **Books recommended:**

1. Text Book of Cosmeticology – by Harry's
2. Cosmetic Science and technology – Sagarin.

### HCT- 8.3 Cosmeceuticals Microbiology

1] A) Introduction:

I) Classification & morphology of Bacterial and General characteristics occurrence and morphology of yeast, Moulds, protozoa & algae.

II) Microbial Analysis:

i) Stains & staining techniques in microbiology.

B) Isolation & maintenance of pure culture :

i. Streak plate & pour plate method of isolation.

ii. Enrichment culture techniques.

iii. Serial dilution, Techniques.

iv. Isolation of identification of gram +ve& -ve organisms

(15 L)

2] Microbial Control:

a)Definitions: Sterilization, Disinfections, Antiseptic, Sanitizer, Germicides, Microbiostasis, Antimicrobials, Preservatives.

b) Factors influencing antimicrobial activity.

c) Factors related to the killing agent, intensity, concentration, time of action & temperature.

d) Factors related to the organism being killed: Total no. of organisms being killed, kind of organism, physiological state of organism & environmental conditions.

e) Mechanism of cell injury.

f) Physical control

g) Chemical Control

h) Standardization of disinfectant phenol co-efficient.

i) Antimicrobial Assay

(15L)

3] A) Nutritional requirement for microbes: Nutritional classification of bacteria photographs, chetrops  
Types of media: Synthetic media, Non synthetic media.

B) Principle methods of analysis to enumerate various types of organisms e.g. APC. (15L)

4] A) Introduction to fungi and virus: General properties of fungi, fungal classification, general properties of virus and its life cycle. B) Efficacy testing of preservative. (15L)

**Books recommended:**

1. A.O.A.C. (Association of official analytical collaboration- International )
2. Badlsametal : Cosmetic Science & Technology Vol. I,II,III, Ed.: Wiley Itervcine.
3. W. A. Poucher: Perfumes, Cosmetics & Soaps Vol. I,II,III, Ed.: Chapman & Hall.
4. Indian Standard Institution Booklets.
5. Booklet: Pharmaceutical Analysis.
6. A.H. Backett& J. B. Stanlake: Practical Pharmaceutical Chemistry.
7. Garret : Text Book & Pharmaceutical Analysis
8. A. L. Vogel :Quantative inorganic Analysis.
9. Ewing : Instrumental Method of Chemical Analysis
10. Connoers : Text Book of Pharmaceutical Analysis
11. Higuchi : Pharmaceutical Analysis .
12. Microbiology by Pelzer & Reed
13. Microbiology by Sally.

### HCT- 8.4 Herbal Cosmetics-II

- 1] Study of following herbs used in skin care cosmetic formulations with reference to their biological and geographical sources, chemical constituents, cosmetic or cosmeceuticals uses of following:  
*Raktachandan, Tulsi, Majistha, Papaya, Lemon, Carrot, Orangepeel, Grapefruit* (citrus paradise),  
*Kesar, Lotus, ficusgolmerata* (umber), *Akarkara, Beetroot, Palash* (15 L)
- 2] Study of following herbs used in Hair care cosmetic formulations with reference to their biological and geographical sources, chemical constituents, cosmetic or cosmeceutical uses of following:  
*Hibiscuss* (Jaswand), *Bhringaraj, Curry leaves, Neem, Arnica, Seetaphal* (Plant and seeds) and  
Pomegranate (*Punica granatum*) (15 L)
- 3] Various methods of extraction employed for herbal constituents. (15 L)
- 4] I) Formulating appropriate cosmetic products by incorporating herbal actives in skin care products:  
Creams, powder, lotion  
II) Formulating appropriate cosmetic products by incorporating herbal actives in hair care products:  
Hair oil, shampoo, hair tonics (15 L)

#### Books recommended:

1. Treas&Erans : Text Book of Pharmacognosy.
2. Claus &Tyler :Pharmacognosy.
3. Nadkarni :MeterialMedica
4. C.S.I.R.: Wealth of India
5. Pharmacognosy by C.K.Kokate, A.P.Purohit, S.B.Gokhale- Nirali Prakashan.

### **SCT 8.1 Management and Organizational Behavior:**

01. Basic concepts of Management: (15L)
- Evolution of Management Thought
  - Functions of Management
  - F.W. Taylor and Henry Fayol's contribution.
  - Theories of Group Formation
  - Formal Organization & Informal Groups & their interaction
  - Importance of teams
  - Formation of teams
  - Team Work
02. Planning and Organizing: (15 L)
- Nature and Purpose
  - Setting Objectives
  - Management by Objectives
  - Steps and Hierarchy of Plans.
  - Nature and Purpose
  - Departmentation
  - Line and Staff Authority –
  - Decentralization – Centralization
  - Authority
  - Responsibility
  - Accountability and Power.
03. Controlling and Coordinating (15 L)
- Process of Controlling
  - PERT
  - CPM
  - Work Study
  - Operations Research
  - Quality Circles
  - Kaizen
04. Motivation (15L)
- Motives
  - Characteristics
  - Classification of Motives
  - Primary Motives
  - Secondary Motives
  - Morale
  - Definition & relationship with productivity
  - Morale Indicators: Theories of Work motivation
  - Maslow's Theory of Need Hierarchy
  - Herzberg's Theory of Job Loading

Books Recommended:

01. Essentials of Management – By Harold Koontz & Heinz Weihrich – 7th Ed. – Tata McGraw Hill.
02. Essentials of Management – By Joseph L. Massie – Prentice Hall India.
03. Management of Organisation Behaviour – By Paul Hersey & Blanchard – Prentice Hall India.
04. Organisational Behaviour – By John W. Newstrom – Tata McGraw Hill.
05. Organisational Behaviour – By Fred Luthans – McGraw Hill Intl.
06. Management Information System – By Dr. P.C. Pardeshi & Others.
07. Management: Tasks, Responsibilities & Practices – By Peter Drucker – Allied Publisher
08. Administrative Thinkers by D Ravindra Prasad, V S Prasad, P Sathyanarayana- Sterling Publishers Private Limited

### SCT 8.2 Plant Design

- 1] Process hazards & safety measure in equipment design: Introduction, Hazards in process Industries, analysis of hazards, Safety Measures, Safety measure in equipment designs. (15 L)
- 2] Reaction vessel : Material of construction, agitation, classification of reaction vessels, heating systems, design, consideration. (15 L)
- 3] Agitators : Introduction, types, power requirement, Design of agitation system components, Drive for Agitators. (15 L)
- 4] A) Storage Vessels : Storage Vessels for Fluids, Non-volatile fluids, Volatile liquids gases, design of tanks, nozzles and mountings.  
B) Driers : Introduction, Types, design considerations. (15 L)

#### Books recommended:

1. Process Equipment Design: M. V. Joshi
2. Chemical Engineer's handbook: Mc-Graw Hill, Perry.
3. Process equipment design – Dr. S. D. Dawande

### **HCP 8.1: Practical- III**

#### **Colours in Cosmetics**

1] Preparation of colour solution - Water soluble colours, Oil soluble colours

2] Incorporation of colours (Quantity) and perfume (q. s.)

a) Powders

b) Lipsticks

c) Eye Shadow

d) Rouge

e) Compacts

f) Mascara

g) Nail lacquers

h) Shampoo (Emulsion / clear)

i) Hair oils / Hair gels

j) Hair colorants

k) After shave lotions

l) Toothpaste

m) Mouth wash

n) Gels

3] Determination of colours and Colour matching of marketed products.

#### **Cosmetic Technology - VI**

1] Shaving preparations

2] Foot preparations

3] Sunscreening preparations

4] Manicure Preparations

5] Tooth preparations

6] Mouth wash

## HCP 8.2 Practical- IV

### Cosmeceuticals Microbiology

- 1] Microbial Analysis
  - i. Staining techniques, preparation of media, isolation of culture.
  - ii. Aseptic transfer
  - iii. Determination of Rider Walker coefficient
  - iv. Antimicrobial assay
  - v. Estimation of total plate count in given cosmetic product.
  - vi. Identification & Isolation of gram –ve pathogenic organism
  - vii. Estimation of fungi in given cosmetic
  - viii. Challenge test for preservative efficacy.
- 2] Study of environmental isolates.
- 3] Microbiological testing of raw materials & finished products.

### Herbal Cosmetics-II

- 1] Practical based on- morphological characters, extraction by appropriate method, identification of chemical constituents, and incorporation of extract in suitable formulations of any three herbal ingredients from each (i) and (ii) of following,
  - i) *Tulsi, Majistha, Papaya, Lemon, Carrot, Orange peel, Grapefruit(citrus paradise), Kesar, Lotus.*
  - ii) *Hibiscuss (Jaswand), Bhringaraj, curry leaves, Neem, Arnica, Seetaphal (Plant and seeds) Pomegranate (Punica granatum)*