FYUGP-Scheme I-VIII Semester

Bachelor of Science Cosmetic Technology (Honors/Research)

Four Year (Eight Semester) Degree Course

Teaching and Examination Scheme

B.Sc.CT Semester-I

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs	SEE	CIE	Min	Exam Hrs	SEE	CIE	Min
1	DSC	Cosmetic Chemistry	BCT1T01	2	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Cosmetic Chemistry	BCT1P01	-	-	2	1	-	-	-	-	3	80	20	50
3	DSC	Natural Cosmetic Agent	BCT1T02	2	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Natural Cosmetic Agent	BCT1P02	-	-	2	1	-	-	-	-	3	25	25	25
5	**GE**/OE	Physical Chemistry	BGE1T01	1	-	-	1	2	40	10	20	-	-	-	-
6	**GE**/OE	Physical Chemistry	BGE1P01	-	-	2	1	-	-	-	-	3	25	25	25
7	**GE**/OE	Organic Chemistry	BGE1T02	1	-	-	1	2	40	10	20	-	-	-	-
8	**GE**/OE	Organic Chemistry	BGE1P02	-	-	2	1	-	-	-	-	3	25	25	25
9	VSEC/ VSC	Dermatherapy & Beauty Culture	BVS1T01	1	-	-	1	2	40	10	20	-	-	-	-
10	VSEC/ VSC	Dermatherapy & Beauty Culture	BVS1P01	-	-	2	1	-	-	-	-	3	25	25	25
11	VSEC/ SEC	Anatomy & Physiology	BVS1T02	2	-	-	2	3	80	20	40	-	-	-	-
12	VSEC/ SEC	Anatomy & Physiology	BVS1P02	-	-	2	1	-	-	-	-	3	25	25	25
13	AEC	English Communication Skills	BAE1T01	2	-	-	2	2	40	10	50	-	-	-	-
14	VEC	Environmental Science	BVET01	2	-	-	2	3	80	20	40	-	-	-	-
15	IKS	Indian Knowledge System (Ancient History of Cosmetics)	BIK1T01	1	-	-	1	2	40	10	50	-	-	-	-
16	CC	Refer CC Basket	BCC1P01	-	-	4	2	-	-	-	-	-	-	100	50
				14		**16**	**22**		**520**	**130**			**205**	**245**	

B.Sc.CT Semester-II

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs	SEE	CIE	Min	Exam Hrs	SEE	CIE	Min
1	DSC	Cosmetic Chemistry	BCT2T01	2	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Cosmetic Chemistry	BCT2P01	-	-	2	2	-	-	-	-	3	80	20	50
3	DSC	Instrumental Methods of Analysis	BCT2T02	2	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Instrumental Methods of Analysis	BCT2P02	-	-	3	1	-	-	-	-	3	25	25	25
5	**GE**/OE	Physical Chemistry	BGE2T03	1	-	-	1	2	40	10	20	-	-	-	-
6	**GE**/OE	Physical Chemistry	BGE2P03			2	1					3	25	25	25
7	**GE**/OE	Organic Chemistry	BGE2T04	1	-	-	1	2	40	10	20	-	-	-	-
8	**GE**/OE	Organic Chemistry	BGE2P04			2	1					3	25	25	25
9	VSEC/SEC	Dermatherapy & Beauty Culture	BVS2T03	1	-	-	1	2	40	10	20	-	-	-	-
10	VSEC/SEC	Dermatherapy & Beauty Culture	BVS2P03	-	-	2	1	-	-	-	-	3	25	25	25
11	VSEC/VSC	Anatomy & Physiology	BVS2T04	1	-	-	1	2	40	10	20	-	-	-	-
12	VSEC/VSC	Anatomy & Physiology	BVS2P04	-	-	2	1	-	-	-	-	3	25	25	25
13	AEC	Fundamentals of Mathematics & Statistics	BAE2T02	2	-	-	1	3	40	10	50	-	-	-	-
14	VEC	Constitution of India	BVE2T02	2	-	-	2	3	80	20	40	-	-	-	-
15	IKS	Indian Knowledge System (Modern History of Cosmetics)	BIK2T02	1	-	-	2	2	80	20	40	-	-	-	-
16	CC	Refer CC Basket	BCC2P02	-	-	4	2	-	-	-	-	-	-	100	50
				13		**17**	**22**		**520**	**130**			**205**	**245**	

B.Sc.CT Semester-III

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs	SEE	CIE	Min	Exam Hrs	SEE	CIE	Min
1	DSC	Cosmetic Technology	BCT3T01	3	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Cosmetic Technology	BCT3P01	-	-	3	2	-	-	-	-	3	25	25	25
3	DSC	Cosmetic Chemistry	BCT3T02	2	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Cosmetic Chemistry	BCT3P02	-	-	2	1	-	-	-	-	3	25	25	25
5	Minor	Minor 1 (Refer Minor Basket)		2	-	-	2	3	80	20	40	-	-	-	-
6	Minor	Minor 1 (Refer Minor Basket)		-	-	2	1	-	-	-	-	3	25	25	25
7	Minor	Minor 2 (Refer Minor Basket)		2	-	-	2	3	80	20	40	-	-	-	-
8	Minor	Minor 2 (Refer Minor Basket)		-	-	2	1	-	-	-	-	3	25	25	25
9	**GE**/ OE	Introductory Pharmacology & Toxicology	BGE3T05	2	-	-	2	3	80	20	40	-	-	-	-
10	VSEC	Dermatherapy & Beauty Culture	BVS3T05	2	-	-	2	3	80	20	40	-	-	-	-
11	VSEC	Dermatherapy & Beauty Culture	BVS3P05	-	-	2	1	-	-	-	-	3	25	25	25
12	AEC	Drug & Cosmetic laws	BAE3T03	2	-	-	2	3	80	20	40	-	-	-	-
13	AEC	Maintenance of Records as per Drug & Cosmetic laws	BAE3P03	-	-	2	-	-	-	-	-	3	40	10	25
14	CC	Refer CC Basket	BCC3P03	-	-	4	2	-	-	-	-	-	-	100	50
				15		**17**	**22**		**560**	**140**			**165**	**235**	

B.Sc. CT Semester-IV

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs	SEE	CIE	Min	Exam Hrs	SEE	CIE	Min
1	DSC	Cosmetic Technology	BCT4T01	3	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Cosmetic Technology	BCT4P01	-	-	2	1	-	-	-	-	3	25	25	25
3	DSC	Cosmetic Engineering	BCT4T02	2	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Cosmetic Engineering	BCT4P02	-	-	2	1	-	-	-	-	3	25	25	25
5	Minor	Minor3 (Refer Minor Basket)		2	-	-	2	3	80	20	40	-	-	-	-
6	Minor	Minor3 (Refer Minor Basket)		-	-	2	1	-	-	-	-	3	25	25	25
7	Minor	Minor4 (Refer Minor Basket)		2	-	-	2	3	80	20	40	-	-	-	-
8	Minor	Minor4 (Refer Minor Basket)		-	-	2	1	-	-	-	-	3	25	25	25
9	**GE**/ OE	Introductory Pharmacology & Toxicology	BGE4T06	2	-	-	2	3	80	20	40	-	-	-	-
10	VSEC	Dermatherapy & Beauty Culture	BVS4T06	1	-	-	2	3	80	20	50	-	-	-	-
11	VSEC	Dermatherapy & Beauty Culture	BVS4P06	-	-	2	1	-	-	-	-	3	25	25	25
12	AEC	Sanskrit	BAE4T04	1	-	-	1	3	40	10	50	-	-	-	-
13	CEP	Community service	BCM4P01	-	-	-	2	-	-	-	-	-	50	50	50
14	CC	Refer CC Basket	BCC4P04	-	-	4	2	3	-	-	-	-	-	100	50
				13		**14**	**22**		**520**	**130**			**225**	**225**	

B.Sc.CT Semester-V

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs	SEE	CIE	Min	Exam Hrs	SEE	CIE	Min
1	DSC	Cosmetic Technology	BCT5T01	3	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Cosmetic Technology	BCT5P01	-	-	2	1	-	-	-	-	3	25	25	25
3	DSC	Perfumes	BCT5T02	3	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Perfumes	BCT5P02	-	-	2	2	-	-	-	-	3	80	20	50
5	DSC	Principles of Cosmeceutics	BCT5T03	3	-	-	2	3	80	20	40	-	-	-	-
6	DSC	Principles of Cosmeceutics	BCT5P03	-	-	2	2	-	-	-	-	3	80	20	50
7	Minor	Minor5 (Refer Minor Basket)		2	-	-	2	3	80	20	40	-	-	-	-
8	Minor	Minor5 (Refer Minor Basket)		-	-	2	1	-	-	-	-	3	25	25	25
9	Minor	Minor6 (Refer Minor Basket)		2	-	-	2	3	80	20	40	-	-	-	-
10	Minor	Minor6 (Refer Minor Basket)		-	-	2	1	-	-	-	-	3	25	25	25
11	**GE**/OE	Pharmacology and Interactions	BGE5T07	2	-	-	2	3	80	20	40	-	-	-	-
12	VSEC	Cosmetic Validation	BVS5T07	2	-	-	2	3	80	20	40	-	-	-	-
13	CEP	Community Service	BCM5P02	-	-	2	1	-	-	-	-	-	25	25	25
				17		**12**	**22**		**560**	**140**			**260**	**140**	

B.Sc.CT Semester-VI

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs	SEE	CIE	Min	Exam Hrs	SEE	CIE	Min
1	DSC	Perfumes	BCT6T01	2	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Perfumes	BCT6P01	-	-	2	1	-	-	-	-	3	40	10	25
3	DSC	Cosmetic Technology	BCT6T02	3	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Cosmetic Technology	BCT6P02	-	-	2	2	-	-	-	-	3	80	20	50
5	DSC	Principles of Cosmeceutics	BCT6T03	3	-	-	2	3	80	20	40	-	-	-	-
6	DSC	Principles of Cosmeceutics	BCT6P03	-	-	2	2	-	-	-	-	3	80	20	50
7	DSE	Cosmetic Engineering	BCT6T04	1	-	-	1	2	40	10	20	-	-	-	-
8	DSE	Cosmetic Engineering	BCT6P04	-	-	2	1	-	-	-	-	3	40	10	25
9	Minor	Minor 7 (Refer Minor Basket)		1	-	-	2	2	80	20	40	-	-	-	-
10	Minor	Minor 7 (Refer Minor Basket)		-	-	2	1	-	-	-	-	2	25	25	25
11	**GE**/OE	Pharmacology and Interactions	BGE6T08	2	-	-	1	3	40	10	20	-	-	-	-
12	VSEC	Cosmetic Validation	BVS6P08	-	-	2	1	-	-	-	-	2	40	10	25
13	OJT	Industrial Training **(Six Weeks)**	BOJ6P01	-	-	8	4	-	-	-	-	-	100	100	100
				12		**20**	**22**		**400**	**100**			**405**	**195**	

B.Sc. CT Semester-VII

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs	SEE	CIE	Min	Exam Hrs	SEE	CIE	Min
1	DSC	Perfumes &Colours	BCT7T01	3	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Perfumes &Colours	BCT7P01	-	-	2	2	-	-	-	-	3	80	20	50
3	DSC	Cosmetic Technology	BCT7T02	3	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Cosmetic Technology	BCT7P02	-	-	2	2	-	-	-	-	3	80	20	50
5	DSC	Plant Design	BCT7T03	2	-	-	2	3	80	20	40	-	-	-	-
6	DSC	Plant Design	BCT7P03	-	-	2	1	-	-	-	-	3	25	25	25
7	DSE	Quality Assurance Techniques	BCT7T04	2	-	-	2	3	80	20	40	-	-	-	-
8	DSE	Quality Assurance Techniques	BCT7P04	-	-	2	1	-	-	-	-	3	25	25	25
9	DSE	Herbal Cosmetics	BCT7T05	3	-	-	2	3	80	20	40	-	-	-	-
10	DSE	Herbal Cosmetics	BCT7P05	-	-	2	2	-	-	-	-	3	80	20	50
11	DSE	Elective-1 A or B (Refer Basket)	BCT7T06	2	-	-	2	3	80	20	40	-	-	-	-
12	RM	Research Methodology	BCT7T07	2	-	-	2	3	80	20	40	-	-	-	-
				17		**10**	**22**		**560**	**140**			**290**	**110**	

B.Sc. CT Semester-VIII

SN	Course Category	Name of Course	Course Code	Teaching Scheme Hrs.			Total Credits	Examination Scheme							
								Theory				Practical			
				TH	TU	P		Exam Hrs.	SEE	CIE	Min	Exam Hrs.	SEE	CIE	Min
1	DSC	Perfumes &Colours	BCT8T01	3	-	-	2	3	80	20	40	-	-	-	-
2	DSC	Perfumes &Colours	BCT8P01	-	-	2	2	-	-	-	-	3	80	20	50
3	DSC	Cosmetic Technology	BCT8T02	3	-	-	2	3	80	20	40	-	-	-	-
4	DSC	Cosmetic Technology	BCT8P02	-	-	2	2	-	-	-	-	3	80	20	50
5	DSC	Plant Design	BCT8T03	2	-	-	2	3	80	20	40	-	-	-	-
6	DSC	Plant Design	BCT8P03	-	-	2	1	-	-	-	-	3	25	25	25
7	DSE	Quality Assurance Techniques	BCT8T04	3	-	-	2	3	80	20	40	-	-	-	-
8	DSE	Quality Assurance Techniques	BCT8P04	-	-	2	2	-	-	-	-	3	80	20	50
9	DSE	Herbal Cosmetics	BCT8T05	3	-	-	2	3	80	20	40	-	-	-	-
10	DSE	Herbal Cosmetics	BCT8P05	-	-	2	2	-	-	-	-	3	80	20	50
11	DSE	Elective-2 A or B (Refer Basket)	BCT8T06	2	-	-	2	3	80	20	40	-	-	-	-
12	RP	Project (Review/ Research)	BRP8P01	-	-	2	1	-	-	-	-	3	25	25	25
				16		**12**	**22**		**480**	**120**			**370**	**130**	

Note:- Total Credits 176

Abbreviations: Generic/Open Electives: OE, Vocational Skills & Skill Enhancement Courses: VSEC, Vocational SkillCourses: VSC, Skill Enhancement Courses: SEC, Ability Enhancement Courses: AEC, Indian Knowledge Systems: IKS,Value Education Courses: VEC, On Job Training (Internship/Apprenticeship): OJT, Field Project: FP, CommunityEngagement & Service: CEP, Co-curricular Courses: CC, Research Methodology: RM, Research Project: RP

Basket for MINOR Category Courses Bachelor of Science Cosmetic Technology

Semester	**Course Category**	**Name of Course**	**Course Code**	
			Theory	**Practical**
III	MINOR1	Natural Cosmetic Agents	BCT1T02	BCT1P02
	MINOR2	Instrumental Methods of Analysis	BCT2T02	BCT2P02
IV	MINOR3	Cosmetic Technology	BCT3T01	BCT3P01
	MINOR4	Cosmetic Chemistry	BCT3T02	BCT3P02
V	MINOR5	Cosmetic Technology	BCT4T01	BCT4P01
	MINOR6	Cosmetic Engineering	BCT4T02	BCT4P02
VI	MINOR7	Cosmetic Technology	BCT5T01	BCT5P01

Basket for Elective (DSE) Category forBachelor of Science Cosmetic Technology

Semester	Course Category	Name of Course	Course Code
VII	Elective 1	A. Personnel Management in Cosmetic Industries	BCT7T06
		B. Production Management in Cosmetic Industries	BCT7T06
VIII	Elective2	A. Marketing Management of Cosmetics	BCT8T06
		B. Financial Management of Cosmetics	BCT8T06

FYUGP-I-VIII Semester

Bachelor of Cosmetic Technology (Honors/Research)

Four Year (Eight Semester Degree Course)

(Question Paper Pattern for all subjects)

Scheme for Theory Examination

Duration for each theory Examination: **3 Hours for 80 Marks & 2 hours for 40 Marks**

Maximum Marks Allotted to each Theory:**80/40**

Instruction for paper setting and distribution of Marks-

1) The Examiner shall set a question paper of 8 questions. The examiner has to set **Eight** questions on all units. Preferably **one** question on each unit and a **last question** based on all units together. Each question will be of 16 marks (for 80 Marks question Paper) and 10 Marks (for 40 Marks question Paper), internal equal division is suggested.

2) The moderation committee shall retain 7 questions.

3) The student should answer any 5 questions out of 7 in case of paper of 80 marks

4) The student should answer any 4 questions out of 6 in case of paper of 40 marks

Syllabus for Four Year Degree Course
BACHELOR OF SCIENCE COSMETIC TECHNOLOGY

Semester - I

BCT1T01 **Cosmetic Chemistry**

SEE - 80
CIE – 20
Total - 100

Course Outcomes
Impart the knowledge of various basic processes for evaluation of impurities in cosmetics.

1. Sources of impurities and their control in Cosmetic raw materials. (6 Hrs.)

2. Limit tests, limit test of chlorides, sulfates, lead, arsenic and heavy metals. (6 Hrs.)

3. Acid base theory, concept of pH, Buffer solutions, Acid Base titrations, Standard solutions, Acid base Indicators, Theory of Acid base titration curves (6 Hrs.)

4. Non-aq. titration of weak acid and weak bases – indicators used and application. (6 Hrs.)
5. Theoretical basis of qualitative inorganic analysis. (6 Hrs.)

Reference Books:

1. Text book of Practical Pharmaceutical Chemistry by Beckette and Stentake.
2. Quantitative Inorganic analysis be I. Vogal.
3. Cosmetic Chemistry -1 by Dr. Sheela Kulkarni

BCT1T02

Natural Cosmetic Agents

SEE - 80
CIE – 20
Total - 100

Course Outcomes
Introduction of Natural ingredients for example herbs and other materials of natural sources.

1. History, development and role of natural product in cosmetic & medicine.
   Different systems of classification of drugs of natural origin their merits & demerits. (6 Hrs.)
2. Herbs description and morphology of organized and unorganized herbs.
   Organized herbs root, stem, leaf and fruit and seed. Unorganized herbs – mucilage, latex and extracts. (6 Hrs.)

3. I. Carbohydrate-
a) Definition, classification and general identification tests.
b) study of following carbohydrates used in cosmetics with respect to their source, chemical constituents and uses-i) Starches – Wheat, maize, rice, potato ii) Gums- Acacia, gaur-gum. pectin, agar, and cellulose (6 Hrs.)
II. Lipids-
a) Definition, classification and general identification tests.
b) i) oils – castor, linseed, olive, sesame, coconut, arachise oil
ii) fat and waxes – kokum butter, lanoline, beeswax, spermaceti, carnauba wax, candellila wax, shea butter. (6Hrs.)

4. Resin and balsum -
a) Definition, classification and general identification tests.
b) Study of following - Balsum of Tolu, Balsum of Peru, Benzoin, Storax, Colophony, Asafoetida.
Tannins – Definition, Classification and Identification test.
Study of the following – Black Catechu, Tannic Acid, Amla, Behra, Hirda, Arjun, Pale catechu, Ashok. (6 Hrs.)

5. Adulteration - types of adulteration, Method of adulteration and methods of detection of adulteration in Natural ingredients and Study of mineral ingredients such as Kaolin, Bentonite, Talc., Fuller's earth, Mica, Calamine. (6Hrs)

Books recommended:

1. Text book of Pharmacognosy – Trease and Evan's
2. Pharmacognosy – By Claus and Tayler.
3. Text Book of Pharmacognosy – T. E. Wallis.
4. Materia Medica – By Nadkarni.
5. Wealth of India – CSIR
6. Indian medical plants: by Kirtikar & Basu
7. Pharmacognosy – by Dr. Kokate
8. Naturals and Cosmetics – by Dr. Satish Sakharwade

BGE1T01 Physical Chemistry

SEE - 40
CIE – 10
Total - 50

Course outcomes

As the course is completely based on chemical processes. Chemistry subject inparts knowledge of ingredients and properties as well as basic physical properties.

1] Thermo chemistry –Introduction, heat of reaction at constant volume and constant pressure, Heat of combustion, heat of neutralization, heat of solution and their determination. Laws of thermo chemistry. (6Hrs)

2] Physical Properties and properties of liquids molecules.
i) Surface tension ii) Viscosity

iii) Intermolecular forces and it's impact on states of matter, physical properties and chemical constitution, parachor, dipole moment. (6Hrs)

3] Osmotic pressure, osmosis, semi – permeable membrane, osmotic pressure measurement, laws of osmotic pressure Molecular wt. Calculations. (6Hrs)

4] Faraday's laws of electrolysis, conductivity of solutions, equivalent conductivity and it's determination, principles of conductometric titration. (6Hrs)

5] E.M.F. of Galvanic cell, Std. Oxidation Potential of an electrode, glass, calomel, redox electrodes, Principles of potentiometric titration. (6Hrs)

Books recommended:

1. A.N. Martin – Physical Pharmacy
2. Glasstone – Elements of Physical Chemistry
3. A. J. Med – Physical Chemistry
4. Vogel- Quantitative Inorganic Analysis.
5. Bahl and Tuli : Essentials of Physical Chemistry

BGE1T02 Organic Chemistry

SEE - 40
CIE – 10
Total - 50

Course outcomes

As the course is completely based on chemical processes. Chemistry subject inparts knowledge of ingredients and properties as well as basic physical properties.

1. Hydrocarbons (Saturated)
   Alkanes, Terahedral natural of carbon, SP^3 hybridisation, isomerism, liquid paraffin, hard paraffin, preparation and reaction of cyclolkanes…… (6Hrs)

2. Hydrocarbon (Unsaturated) Alkenes SP^2 Hybridisation, Markonikoff Rules, Cis-trans Isomerism, Dienes: preparation properties chemical reaction classification of dienes Alkynes SP – hybridization, preparation, properties, reactions of acetylene. (6Hrs)
3. Estimation and Quantitative Analysis: Estimation of elements and their principals, Determination of equivalent weight of acids and bases. Determination of empirical and molecular formula of acids and bases. (6Hrs)
4. Ethers- Definition,Classificationpreparation, physical and chemical properties and reactionof ethers, diethyl ether, an aesthetic ether, thioether and vinyl ethers and their cosmetic uses (6Hrs)

5. I) Aldehyde & Ketones-Definition and nomenclature, preparation, Classification preparation, physical and chemical properties and chemical reaction of aldehyde and ketones and their cosmetic uses (6Hrs)
   II) Carboxylic Acid – classification, structure, preparation and chemical reaction of monocharboxylic acid Optical isomerism and their cosmetic uses (6Hrs)

Books Recommended:

1. Text Book of Organic Chemistry by Morrison and Boyd.
2. L.M. Atherton, Bentley and Driver's Text Books of Pharmaceutical Chemistry. Oxford University Press, London.
3. Text book of Organic Chemistry by Bahl & Bahl.

BVS1T01 **Dermatherapy and Beauty Culture**

SEE - 40
CIE – 10
Total - 50

Course Outcomes

Impart knowledge of the primary techniques of Dermatherapy and application of Beauty products.

1. Skin: structure and functions of skin (6Hrs)
   i) Skin cleansing methods
   ii) Skin hygiene
   iii) Skin types
   iv) Skin Tonning Methods
   v) Skin Astringents

2. Bleaching (6Hrs)
   i) Preparation of paste
   ii) Patch test
   iii) Face bleaching
   iv) Hand bleaching
   v) Leg bleaching
   vi) Precautions.

3. Hand (6Hrs)
   i) Skin Types
   ii) Hand Cleansing
   iii) Manicure
      a. Requirement for Manicure
      b. Procedure
      c. Nail shaping
      d. Cuticle removing
      e. Hand Massage.
      f. Application of varnish
   iv) Electric Manicure

4. Nails (6Hrs)
   i) Disorders
   ii) Treatment
   iii) Care

5. Foot (6Hrs)
   i) Hygiene

ii) Pedicure

a. Requirement for Pedicure
b. Procedure.
c. Massage for pedicure.
d. Application of varnish

Books recommended:

1. Ann Eaton and Flurence Openshaw, Cosmetic Make – Up and Manicure.

BVS1T02 Anatomy & Physiology

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Teaches basic knowledge of Anatomy and Physiology of body specially skin and its appendages like Hair and Nails which are important for application of cosmetics.

1. Cell Structure & Elementary tissues of body-
   i) Epithelial Tissues ii) Connective Tissues
   iii) Nervous Tissues iv) Muscular Tissues (6Hrs)

2. i) Detail knowledge of structure and function of Skin
   ii) Skin appendages –
      1 Sweat gland & Sebaceous gland
      2 Nails
   iii) Eye
   iv) Tooth
   a) Keratinisationand
   b) Colour & Pigmentation ,skin disorders due to external factors and treatment
   c) Baby skin and adult skin (6Hrs)

3. Equipments used to determine Skin damage (6Hrs)

4. Suppliments used for maintaining skin health (6Hrs)

5. Temperature conservation – Temperature regulation and heat balance of body. (6Hrs)

Books Recommended:

1. Best and Taylor – The Living Body.
2. Kimber and Gray – Human Physiology and Anatomy
3. Fransis – Introduction to Human Anaomy.
4. Pharmacology and Pharmacotherapeutics By R.S. Satoskar and S. Bhandarkar
5. Ross & Wilson – Anatomy and physiology in health and illness – Ross & Wilson
6. Anatomy and physiology for Nurse – Windwood R.S.

BAE1T01 **English Communication Skills**

SEE - 40
CIE – 10
Total - 50

1. Writing skills: - Letter Writing, Informal letter, Formal letter, Bio-data/Resume, Job Application. Report Writing: Dialogue writing, Advertisement . (6Hrs)

2. Personality Development: Effective Public speaking, Goal setting, Time management, Stress management (6Hrs))

3. Speech Writing: View and Counterview, Expansion of Ideas, completion and Developing a story (6Hrs)
4. Listening skills: Loud Reading, Speaking, Conversations, Telephonic conversation. (6Hrs)
5. Interview techniques, group discussion, and situational role play. (6Hrs)

BVE1T01 **Environmental Science**

SEE - 80
CIE – 20
Total - 100

COURSE OUTCOMES:

At the end of the course, students shall be able to:

• Explain the basics of Environmental Science and Atmospheric Science along-with the components of Environment

• Explicate the importance of Environmental Education.

• Elucidate the fundamentals of atmospheric science including formation, depletion and effects of ozone layer and acid rain on environment.

• Describe the various physical and chemical characteristics and properties of Water and Soil • Understand the Ecology and its allied branches

• Comprehend about Population and Community Ecology

• Study the changes in Population by understanding the concept of Population ecology

Unit-I: Basics of Environmental Science (7.5 Hrs)

A. Introduction of Environmental Science: Definition, Types, Classification, Characteristics, Components and principles of environment. Scope and need for environmental science, Multidisciplinary nature of environmental science, Environmental ethics.

B. Environmental Education: Goals, Objectives and principles of environmental education, formal and non-formal environmental education, environmental programme, importance of environmental education, environmental awareness.

C. Components of Environment: Atmosphere (Structure and composition),hydrosphere – distribution of water, hydrological cycle, global water balance, lithosphere – Internal structure of Earth, types of rocks, Biosphere- Boundaries of biosphere.

Unit-II: Basics of Atmospheric Science (7.5 Hrs)

A. Atmospheric Chemistry: Structure of atmosphere based on temperature, photochemical reaction in the atmosphere, temperature inversion and lapse rate, smog formation, types of smog (sulphur and photochemical smog), adverse effect of smog on human being, aerosol.

B. Green House Effect: Greenhouse gases, relative contribution and effects of greenhouse effect, control of greenhouse gases. Ozone depletion: chemistry of ozone depletion, Dobson Unit, ozone depleting substances (ODS), ozone hole, consequences of ozone depletion, mitigation measures and international protocols.

C. Acid Rain: Chemistry of Acid Rain, effect of acid rain on ecosystem, control measures. Precipitation – Forms of precipitation (rain, drizzle, snow, sleet, and hail), types of precipitation (conventional, orographic, and cyclonic).

Unit-III: Basics of Ecology (7.5 Hrs)

A. Ecology: Definition, subdivision and modern branches of ecology, ecology spectrum, scope of ecology. Application and significance of ecology to human beings.

B. Abiotic Factors: Temperature: effect of temperature on plants and animals, Adaptation to meet extreme temperature. Light: Zonation in marine habitat, effects of light on plants and animals, Microclimate and fire, Shelford law of tolerance, Leibigs law of minimum.

C. Biotic Factor: Inter specific relationship Positive: Mutualism (symbiosis), commensalism, proto-cooperation Negative: Parasitism, predation, competition, Antibiosis, Neutralism.

Unit-IV: Ecosystems and food chain (7.5 Hrs)

A. Ecosystem: Definition, structure and function of ecosystem, types of ecosystem: Terrestrial (forest, grassland, desert, cropland), Aquatic (Marine and freshwater)

B. Food chain: Definition & types: Grazing food chain, detritus food chain, and parasitic food chain, food web in forest and grassland ecosystem. Ecological pyramids (number biomass and energy), energy flow in ecosystem (Y- shaped). Energy flow and the law of thermodynamics.

C. Biogeochemical Cycles: Definition, classification, gaseous cycle (oxygen, carbon and nitrogen) Sedimentary cycle (phosphorus and sulphur).

Reference Books:

1. Text Book of Environment: K M Agrawal, P.K. Sikdar, and S.C. Deb, Mc'Millan Publication, Mumbai.
2. Man and Environment: M.C. Dash and P.C. Mishra, Mc'Millan Publication, Mumbai.
3. Environmental Science: S.C. Santra, New Central Book Pvt.Ltd, Kolkatta.
4. Environmental Problems and Solution: D.K. Asthana, S.Chand Publication, New Delhi.
5. Environmental Chemistry: S.S. Dara, S.Chand Publication,New Delhi.
6. Environmental Chemistry: A.K. Dey, New Age International Publishers,2001.
7. A Textbook of Environmental Studies: Dr S.Satyanarayan, Dr S.Zade, Dr S Sitre and Dr P.U. Meshram, Allied Publishers, New Delhi.
8. Environmental Biology: Biswarup Mukherjee, Tata McGraw-Hill Publishing Company Ltd, New Delhi,1996.
9. Animal Ecology and Distribution of Animals: Veer Bala Rastogi , Rastogi Publication, Meerut (U.P).
10. Ecology and Environment: P.D.Sharma, Rastogi Publication,Meerut (U.P).
11. Fundamentals of Environmental Biology: S. Arora, Kalyani Publishers.
12. Environmental Biology: P.K.G. Nair, Himalaya Publication.

13. Environmental Biology: K.C. Agrawal, Agro Botanical Publisher, Bikaner,1994

BIK1T01 Indian Knowledge System (Ancient History of Cosmetic)

SEE - 40
CIE – 10
Total - 50

1. History of Cosmetics in India
2. Historical Perspective on the usage of Perfumes and Scented articles in ancient period
3. Natural Cosmetics in Ancient India
4. History of Ayurvedic Ingredients in Cosmetics

Reference-

1. New Cosmetic Science, Takeo Mitsui
2. Pouchers, Perfumes, Cosmetics And Soaps 10th Edition, Hilda Butler
3. Cosmetic Science and Technology, M. S. Balsam, M.M. Sagarin 2nd Edition Volume 3, Krieger Publishing Company

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BCC1P01 Refer CC Basket Total-100

Refer University guidelines

BCT1P01(Practical) Cosmetic Chemistry

SEE – 80
CIE – 20
Total – 100

1. Preparation of Standard solutions: .5 normal, 1 normal and 2 normal. 1 molar, 2 molar % w/v solution, % v/v solution
2. Standardization using different (at least three) primary standard by wt. and volume.
3. Standardization of volumetric apparatus.
4. Volumetric estimation involving Acidimetry, Alkalimetry oxidation & reductions.
5. Experiments based on limit tests of chlorides, Arsenic, ions sulphate & Heavy metals.
6. Practical significance of MSDS. Refer MSDS document for at least five cosmetic material.
7.

BCT1P02 (Practical) Natural Cosmetic Agents

SEE – 25
CIE – 25
Total – 50

1. i Study of organoleptic properties, identification and microscopic studies of :
   a. Rice Starch b. Maize starch
   c. Potato starch d. Wheat starch
   a. Agar b. Gum Acacia.
   c. Tragacanth. d. Gaur Gum
   e. Pectin f. Cellulose

ii General test such as flavonoids, tannin, saponins, alkaloids, glycosides, sugar, reducing sugar.

2. Study of chemical identification of fixed oils and waxes.
   Detection of Adulteration in Olive oil, Coconut oil, Almond oil, and other vegetable oil.
3. Organoleptic study and identification of actives
   a. Tolu Balsum b. Peru Balsum
   c. Benzion d. Storax
   e. Colophony f. Asfoetida
4. Morphological study and identification of following tannin containing agents/ study and identification of actives
   a. Black Catechu. b. Amla
   c. Behra d. Hirada
   e. Ashoka Bark f. Arjua Bark.
5. Organoleptic study of Kaolin, Bentonite, Talc., Fuller's earth, Mica, Calamine.
6. study of volatile oil and TLC determination of clove oil ad peppermint oil.

BGE1P01 (Practical) Physical Chemistry

SEE – 25
CIE – 25
Total – 50

1. Study of surface tension of liquids using a stalagmometer. 4 material
2. Study of Viscosity of liquids using Ostwald's Viscometer. 4 material
3. Study of variation of viscosity of liquid mixtures using an Ostwald's viscometer and its use to determine the concentration of such mixtures.
4. Study the total hardness of water
5. Study the temporary hardness of water.
6. Study the heat of solution of a salt in water.
7. Study the heat of neutralization of a strong acid by a strong base as well as weak acid and strong base using a calorimeter.

BGE1P02 (Practical) Organic Chemistry

SEE – 25
CIE – 25
Total – 50

1. Organic Preparations based on:
   i) Alkaline Hydrolysis
   ii) Acidic Hydrolysis
   iii) Acetylation
   iv) Oxidation

BVS1P01 (Practical) **Dermatherapy and Beauty Culture**

SEE – 25
CIE – 25
Total – 50

Practicals based on methods and practices as per the following contents

1. Skin
   - i) Skin cleansing methods
   - ii) Skin hygiene
   - iii) Skin types
   - iv) Skin Tonning Methods
   - v) Skin Astringents

2. Bleaching
   - i) Preparation of paste.
   - ii) Patch test
   - iii) Face bleaching
   - iv) Hand bleaching
   - v) Leg bleaching
   - vi) Precautions.

3. Hand
   - i) Skin Types
   - ii) Hand Cleansing
   - iii) Manicure
     - g. Requirement for Manicure
     - h. Procedure
     - i. Nail shaping
     - j. Cuticle removing
     - k. Hand Massage.
     - l. Application of varnish
   - iv) Electric Manicure

4. Nails
   - i) Disorders
   - ii) Treatment
   - iii) Care

5. Foot
   - i) Hygiene
   - ii) Pedicure
     - e. Requirement for Pedicure
     - f. Procedure.
     - g. Massage for pedicure.
     - h. Application of varnish

BVS1P02 (Practical) **Anatomy & Physiology**

SEE – 25
CIE – 25
Total – 50

1. Study with the help of Charts and models of-
   a) Skin
   b) Hair
   c) Eye
   d) Tooth
2. Microscopic examination of Epithelial, Cardiac, Smooth Muscles, Skeletal muscles and other tissues.
3. Recording of Body temperature and Pulse.
4. Recording of Heart rate and Blood pressure.

SEMESTER – II

BCT2T01 **Cosmetic Chemistry**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Impart the knowledge of various basic processes for evaluation of impurities in cosmetics.

1. Nernst eq. Calculation of std. Potential, oxi-red titrations, study of common oxidizing agents and reducing agents, oxi-red curves, ceric ammonium sulfate, titanous chloride, 2-6 dichlor phenol indo phenol titration, their theory and applications. (6Hrs)
2. Iodometry and iodimetry, Gravimetric analysis. Quantitative separation, solubility product. Fractional precipitation, CO - & post precipitation Practical aspects of gravimetry and applications. (6Hrs)
3. Precipitation titration, Precipitation and complex forming reactions. Argentometric Titration, Gay-Iusac, Volhard's Mohr's and Fujan's Method. Mercuric nitrate titration. (6Hrs)
4. Complexometric titration, concepts of complexation and chelation, co-ordination number stability constant, titration curves, metal ion indicator, Masking and demasking agents, types of complexometic titration and applications (6Hrs)
5. Determination & significance of acid value, saponification value, iodine value, ester value. (6Hrs)

Reference Books:

1. Text book of Practical Pharmaceutical Chemistry by Beckette and Stentake.
2. Quantitative Inorganic analysis by I. Vogal.

3. Cosmetic Chemistry -1 by Dr. Sheela Kulkarni

BCT2T02 Instrumental Methods of Analysis.

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Introduces the instruments used for analysis of raw material and finished cosmetic products.

1. Introduction to Instruments used for cosmetic analysis, Classification of instrumental Methods.
   Spectroscopy: introduction to spectroscopy, electromagnetic radiation- its properties and spectrum. (6Hrs)
2. Flame photometry- Introduction, General principles, Instrumentations and applications (6Hrs)

3. Refretometry – Introduction to refractive index, theory and principle of Abbe's Refrecotmeter, its application.
   Raman Spectroscopy.- Introduction, principle, Instrumentation, applications. (6Hrs)
4. pH measurement: by pH indicators and by Pontentiometric method (pH meter)
   Its Instrumentation and applications.
   Conductometry:- Introduction, laws and definition of conductance, specific conductance, equivalent conductance, molecular conductance.Principles, instrumentation and applications. (6Hrs)

5. Polarimetry:- Introduction, optical activity, General Principles, apparatus, application in the determination of optical rotation and specific optical rotation of liquid and solid substances. (6Hrs)

Book Recommended:

1. Instrumental Methods of Analysis – Dean, Willar
2. Instrumental Methods of Analysis – Ewing.
3. Quantitative Inorganic Analysis – A.I. Vogel
4. Commercial Method of Analysis – Shall be Biffer.

BGE2T03 Physical Chemistry

SEE - 40
CIE – 10
Total - 50

Course Outcomes

As the course is completely based on chemical processes. Chemistry subject inparts knowledge of ingredients and properties as well as basic physical properties.

1. Phase rule : Phase rule, the terms involved in it and applications to one component

system, water and sulphur system. Introduction to two component systems. (6Hrs)

2. Solutions,: Raoult's law, and it's application, molecular weight determination by measuring vapour pressure, Boiling Pt. & freezing point. (6Hrs)

3. Law of mass action, Le-Chatelier's principle, homogeneous gaseous equilibria and homogeneous equilibra in liquid system. (6Hrs)

4. Chemical kinetics: Introduction, molecularity, order and rate of reaction. Kinetics of first and second order reaction, their characteristics and some methods of determination. (6Hrs)

5. pH metry: pH and hydrogen ion concentration, pH calculation for weak acids and weak bases. Buffer solutions and types, mechanism of buffer action of acidic and basic buffers. Theories of acid base indicators. (6Hrs)

Books recommended:

1. A.N. Martin – Physical Pharmacy
2. Glasstone – Elements of Physical Chemistry
3. A. J. Med – Physical Chemistry
4. Vogel- Quantitative Inorganic Analysis.
5. Physical Chemistry by Bahl & Tuli.

BGE2T04 **Organic Chemistry**

SEE - 40
CIE – 10
Total - 50

Course Outcomes

As the course is completely based on chemical processes. Chemistry subject inparts knowledge of ingredients and properties as well as basic physical properties.

1. Halohydrocarbon: Preparation and reaction of alkyl halide and Grignard reagents and chloroform. (6Hrs)
2. Alcohols – Definition, classification, preparation, properties and chemical reaction of alcohols, fermentation, manufacture of ethyl alcohol, proof spirit, denatured alcohol, glycol and glycerol. (6Hrs)

3. Benzene and other aromatic compounds:
   i) Benzene Resonance and structure – o-p & meta directing effect.
   ii) Aromatic nitro compound (Nitrobenzenes): preparation & properties,
   iii) Aromatic amines (Aniline) – Prearation & Properties.
   iv) Aromatic carboxylic acids (Benzoic and Cinnamic acid, Salicylic acid.)
   (6Hrs)
4. Fats & Oil : Definition, uses, properties. Analysis of fats and oils. Application of fats and oils in cosmetics. (6Hrs)

5. I) Proteins and Amino Acid : Introduction, Peptides, amino Acids, definition,

hydrolysis, polypeptides, qualitative test and colour reaction, essential amino acid. (6Hrs)

II) Carbohydrates and Glucose : Classification and Qualitative test, structure of Glucose, Lactose (excluding derivation). (6Hrs)

Books Recommended:

1. Text Book of Organic Chemistry by Morrison and Boyd.
2. L.M. Atherdon, Bentley and Driver's Text Books of Pharmaceutical Chemistry. Oxford University Press, London.
3. Text book of Organic Chemistry by Bahl & Bahl.

BVS2T03 Dermatherapy and Beauty Culture

SEE - 40
CIE – 10
Total - 50

Course Outcomes

Impart knowledge of the primary techniques of Dermatherapy and application of Beauty products.

1. Eye Brows: (6Hrs)
   a. Factors affecting eye brow shaping.
   b. Determination of correct length of eye brow.
2. Different methods for eyebrow shaping: (6Hrs)
   c. Threading.
   d. Tweezing
3. Treatment for superfluous hair waxing. (6Hrs)
   i) Hot wax treatment
   ii) Cold wax treatment
      i) Leg waxing
      ii) Hand waxing
      iii) Under arm waxing.
4. Nail Arts / Nail designing (6Hrs)
5. Application of false nails (6Hrs)

BVS2T04 Anatomy & Physiology

SEE - 40
CIE – 10
Total - 50

Course Outcomes

Teaches basic knowledge of Anatomy and Physiology of body specially skin and its appendages like Hair and Nails which are important for application of cosmetics.

1. I) Cardiovascular system Anatomy of Heart, flow of blood through heart, blood pressure, structure of artery, vein and capillaries.
   II) Blood –
   i) Composition & Function ii) Blood groups

iii) Coagulation of blood (6Hrs)

2. Respiratory system –Anatomy of organs, mechanism of respiration,Introduction with respect to Aerosols and Aromatherapy (6Hrs)

3. Digestive system – Anatomy of digestive organs, Digestion of carbohydrate, protein and fat.
Excretory system – organs of excretion, structure of kidney, Mechanism of urine formation , mechanism of excretion via skin (6Hrs)

4. Hair- Detailed study of hair, Structure, types, Chemistry, Disorders such as Hair damage reasons and treatments equipments used to determine hair damage , Supplements for healthy hair. (6Hrs)

5. Nervous system – CNS, Brain, anatomy in short, spinal cord, ganglion cranial nerves, reflex action and reflex arch.
Endocrine glands and Hormones. (6Hrs)

Books Recommended:

1. Best and Taylor – The Living Body.
2. Kimber and Gray – Human Physiology and Anatomy
3. Fransis – Introduction to Human Anatomy.
4. Pharmacology and Pharmacotherapeutics By R.S. Satoskar and S. Bhandarkar
5. Ross & Wilson – Anatomy and physiology in health and illness – Ross & Wilson
6. Anatomy and physiology for Nurse – Windwood R.S.

BAE2T02 Fundamentals of Mathematics & Statistics

SEE - 40
CIE – 10
Total - 50

Course Outcomes

To understand the basics regarding Mathematics and statistics.

1. Algerbra: - Profit and loss, percentage calculation, Logarithms (6Hrs)

2. Trigonometry: - Degrees and Radians trigonometric ratios. Identities for sum and difference of angles, multiple angles (6Hrs)
3. Statistics: - Frequency Distribution, Histogram, Representation of data in a curve, Mean, Median mode, Standard deviation, mean deviation from mean, Measures of Central tendency, Correlation, Coefficient of correlation only. (6Hrs)
4. Derivatives (6Hrs)

5. Application of Derivatives:
a) Maxima, Minima b) Rates and motion c) Velocity acceleration (6Hrs)

Books Recommended :

1. Higher Engineering Mathematics by B. S. Grewal (Unit I, II,V).

2. Higher Algebra by Hall and Knight (Unit I)
3. Plane Trigonometry Part I by S.L. Loney (Unit II)

BVE2T02 Constitution of India

SEE - 80
CIE – 20
Total - 100

UNIT – I:

• Historical Background to the Framing of the Indian Constitution: General Idea about the Constituent Assembly of India. (7 Hrs.)

UNIT – II

• Preamble – Nature and key concepts/Constitutional values, Socialism, Secularism, Democracy, Justice, Liberty, Equality and Fraternity • Salient Features of the Constitution of India (8 Hrs.)

UNIT – III

• General study about the kinds, nature and importance of; Fundamental Rights, Directive Principles of State Policy and Fundamental Duties. (7 Hrs.)

UNIT –IV

Introduction of the Constitutional Institutions and Authorities; • Central Legislature and Executive (Parliament of India, President of India and Council of Ministers) • State Legislature and Executive (State legislative Assemblies, Governors and Council of Ministers) • Higher Judiciary (Supreme Court of India and High Courts) (8 Hrs.)

BIK2T02 Indian Knowledge System (Modern History of Cosmetic)

SEE - 80
CIE – 20
Total - 100

1. Evolution of different Cosmetic Products
2. History of Skincare Products
3. History of Haircare Products
4. History of Skincare treatments and its significance
5. History of Haircare treatments and its significance

Reference –

1. New Cosmetic Science, Takeo Mitsui
2. Pouchers, Perfumes, Cosmetics And Soaps 10th Edition, Hilda Butler
3. Cosmetic Science and Technology, M. S. Balsam, M.M. Sagarin 2nd Edition Volume 3, Krieger Publishing Company

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BCC2P02 Refer CC Basket

Total - 100

BCT2P01 (Practical) **Cosmetic Chemistry**

SEE – 80
CIE – 20
Total – 100

1. Preparation and standardization of Cerric Ammonium Sulphate Potassium Iodate, Assays Based on use of above agents.

2. Preparation and standardization of Perchloric Acid and Sodium Methoxide. Assay based on above.

3. Preparation and standardization of Sodium EDTA. Assay based on EDTA.

4. Preparation and Standardization of Silver Nitrate and Amonium Thiocynate. Assay Based on above.

5. Gravimetric analysis: experiments based on gravimetric analysis

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BCT2P02 (Practical) **Instrumental Methods of Analysis**

SEE – 25
CIE – 25
Total – 50

1. Determination of λ – max., absorption curve of organic dyes by Colorimeter.

2. Determination of concentration of organic dyes by Colorimeter and spectrophotometer.

3. Basic Experiment based on chromatography ie paper chromatography, thin layer chromatography and column chromatography

1. Experiment based on pH – Meter, pH determination of cosmetic raw material and products as per IP specification

2. Experiment based on Conductometer, determination of specific conductance/ conductivity of various electrolytes, standard graph, determination of concentration of electrolytes.

3. Study of refractometer, determination of refractive index of cosmetic ingredients as per IP specifications.

4. Experiment based on polarimeter, determination of optical rotation of specific optical rotation of optically active substances as per IP specifications.

BGE2P03 (Practical) **Physical Chemistry**

SEE – 25
CIE – 25
Total – 50

1. Study the phenol – water two phase system and determine the critical temperature of the system.

2. Determine the molecular weight of a nonvolatile compound by the Rast's Camphor method.

3. Study of partition of iodine between Carbon Tetrachloride and water and determine the partition coefficients of iodine between the two solvents.

4. Study the first order kinetics of the hydrolysis of Methyl Acetate in an acid medium.

5. Study the second order kinetics of the reaction of $K_2S_2O_8$ with KI.

6. Study of Buffer solutions and hence determine the pH of buffer solution using a comparator

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BGE2P04 (Practical) **Organic Chemistry**

SEE – 25
CIE – 25
Total – 50

1. Systematic Organic analysis of unknown organic substance (i.e. preliminary tests, detection of elements, groups, determination of physical constants and specific tests and confirmation by derivatives preparation)
   a) Acetic acid
   b) Benzoic acid
   c) Salicylic acid
   d) Urea
   e) Thiourea
   f) Aniline
   g) Glucose

BVS2P03 (Practical) **Dermatherapy and Beauty Culture**

SEE – 25
CIE – 25
Total – 50

Practicals based on methods and practices as per the following contents

1. Eye Brows:
   i) Factors affecting eye brow shaping.
   ii) Determination of correct length of eye brow.
2. Different methods for eyebrow shaping:
   i) Threading.

ii) Tweezing

3. Treatment for superfluous hair waxing.
   i) Hot wax treatment
   ii) Cold wax treatment
   iii) Leg waxing
   iv) Hand waxing
   v) Under arm waxing.
4. Nail Arts / Nail designing
5. Application of false nails

BVS2P04 (Practical) **Anatomy & Physiology**

SEE – 25
CIE – 25
Total – 50

1. Determination of clotting time.
2. Determination of bleeding time
3. Determination of hemoglobin content.
4. Determination of R.B.C. count, D.L.C., T.L.C.
5. Study with the help of charts and models of
   a) Cardiovascular system
   b) Excretory system
   c) Digestive system
   d) Nervous system
6. Skin Patch Test with products
7. Recording of body temperature, Pulse and Heart rate and Blood Pressure.

SEMESTER -III

BCT3T01 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Learn about the preparation of advanced cosmetic products like soaps, colour cosmetic, astringents and tonics, face packs etc.

1. Physical & Chemical properties of agents (Drug & Cosmetics) influencing design of products forms. (6 Hrs.)

2. Monophasic liquid formulations, techniques of enhancing solubilities of ingredients in vehicles, other problems involved in preparation and stability of liquid with special emphasis on spray. (6 Hrs.)

3. Surface active agents – definition classification based on chemical nature and HLB scale, properties and significance in cosmetics (6 Hrs.)

4. Packaging and dispensing of cosmetic formulations: Importance of different materials for containers and closures. Packaging of cosmetic product and labeling. Environmental aspects of packaging materials, appropriate recycling and disposal. Green packaging. (6 Hrs.)

5. Hydrocolloids – definition classification, properties and significance in cosmetics (6 Hrs.)

Books recommended:

1. Mithal Text Book of Pharm formulations B 11, Pilani.
2. The Pharmacopoeia of India
3. Remingtons Pharmaceutical Practices.
4. Cooper & Gum Dispensing for Pharmaceutical Students.
5. Husa: Pharmaceutical Dispensing: mach Publishing Co.
6. Text Book of Cosmeticology – by Harry's

BCT3T02 **Cosmetic Chemistry**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Impart the knowledge of various basic processes for evaluation of impurities in cosmetics.

1. i Amino Acids :
   Classification, essential and non-essential amino acids, ketogenic & glycogenic amino acids, Zwitterions. Physical & Chemical properties of amino acids with respect to their use in cosmetic preparations .Their wide applications in cosmetics.

   ii Proteins :

Sources, classification in detail, Physical and Chemical properties and relation of these properties in use of proteins in cosmetic preparations. Importance of proteins in cosmetic and Pharmaceutical industries.

iii Enzymes :
Definition, nomenclature & classification. Mechanism of enzyme action. Coenzymes & Prosthetic group. Properties of enzymes. Their industrial uses with respect to cosmetic and pharmaceutical industries. (6 Hrs.)

2. i Clay minerals and the natural and synthetic silicates:
Chemistry in brief of silicones. Properties, Natural silicates, synthetics, synthetics silicates. Their properties and uses in preparation of cosmetics and drugs. Toxicity of Silicones. Silk powder.
ii Humectants and Polyols : Choice of humectant, unusual humectants, special uses of humectants. Lanolin : Source,composition, properties, derivatives & uses.
Viscosity Modifiers – eg, gum, alcohol and electrolytes, solvents etc.
iii Perals and Pearl Essence :Definitions, commercial uses, production methods, synthetic pearly substances. (6 Hrs.)

3. Lipids : Sources, classification, structure of simple triglycerides. Waxes: classification, Composition, properties and importance of these properties in cosmetic formulations , uses. Fatty acids: classification essential fatty acids, Production method, Production method, Properties and uses of fatty acids with respect to cosmetic and pharmaceutical establishments Lonolim : composition, derivatives & uses. Derivatives of fatty acids : Their role in Cosmetics,
Fatty Alcohols : Chemistry, types & uses. (6 Hrs.)

4. Vitamins :
Definition, fat soluble and water soluble Vitamins, sources, structure, Physiological & Metabolic role of Vit. A, D, E & K Importance in cosmetics & Pharmaceuticals.
Structure & Sources of water soluble vitamins, B Complex & Vit. C. Their role in Cosmetic industries. (6 Hrs.)

5. Ion exchange resins and their cosmetic uses in case of purified water, Raw water, standards for water as per IP, BP, USP (with recent amendments) (6 Hrs.)

Book Recommended:

1. Chemistry & Manufacture of Cosmetics by M. G. DeNavarre

Minor 1(Refer Minor Basket)

SEE - 80
CIE – 20
Total - 100

Minor 2 (Refer Minor Basket)

SEE - 80
CIE – 20
Total - 100

BGE3T05 **Introductory Pharmacology & Toxicology**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Introduces pharmacological and toxicological aspects of cosmetics, routes of administration and mechanism of actives/ drug action as well as toxicological aspects.

1. Scope of Pharmacology in Cosmetics, Terminologies and Definitions (6 Hrs.)

2. Routes of Administration of drug, giving special emphasis on Topical route, their advantages and disadvantages. (6 Hrs.)

3. Various processes of absorption of drug and the factors affecting absorption. Disposition of drug. (6 Hrs.)

4. General mechanism of drug action, site of drug action, type of drug action. (6 Hrs.)

5. Material safety data sheet (MSDS) its scope, significance during cosmetic material handling with examples. (6 Hrs.)

Books recommended:

1. Pharmacology and Pharmacotherapeutics By R.S. Satoskar and S. Bhandarkar
2. Essentials of pharmacotherapeutics By F.S.K. Barar.

BVS3T05 **Dermatherapy & Beauty Culture**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Impart a knowledge of the application of various cosmetic products systematically with precautions.

1. Structure of skin.
   a) Recognition of skin types.
   b) Different types of treatments suitable to skin conditions and skin types.
   c) Skin care in different seasons.
   d) Diet and Exercises for healthy skin. (6 Hrs.)

2. Different types of skin blemishes and their treatment.
   i. Black heads ii. White heads
   iii Acne iv. Open pores.
   v. Freckles vi. Treatment for curing wrinkles. (6 Hrs.)

3. Muscles of facial expression.
   a) Bones of the Cranium and face (Only labeled diagrams)
   b) Face pack ingredients and their effects
   c) Facial:
   i. Cleaning ii. Toning, iii. Face Massage techniques
   iv. Different types of facial (6 Hrs.)

4. Mask Therapy :
   i. Setting masks. ii. Peel off masks.

iii. Thermal types- paraffin wax masks iv. Non-setting masks. v. Hot oil marks (6 Hrs.)

5. Introduction to aroma therapy.
   a) Methods of extraction of essential oils.
   b) Blending & precautions. Properties of essential oils & carrier oils
   c) Patch testing, safety & precautions.
   d) Different aroma therapy formulations for skin and hair care. (6 Hrs.)

Books recommended:

1. Ann Eaton and Flurence Openshaw, Cosmetic Make – Up and Manicure.
2. A Professional Guide to Hair Dressing and Beauty Therapy by Veena Pitre
3. The Science of Cosmetics by John V. Simmons
4. Complete Beauty Book by Helen Foster
5. Vogue- Body and Beauty Book by Bronwen Meredith
6. A Guide for Health & Beauty Therapist Vol.-1 Face, hands and feet by Gaynor Winyard

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BAE3T03 Drug & Cosmetic Laws

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Teaches regulation, rules and laws schedules related to cosmetics that is Drug and Cosmetic Act.

1. Drugs & Cosmetic Acts and Rules (with reference to Cosmetics). (6 Hrs.)

2. Drugs and Magic Remedies Act. Objectionable Advertisements.
   Prevention of Cruelty to Animal Act. (6 Hrs.)

3. The Medicinal and Toilet preparations (Excise duties) Acts and Rules.
   Pharmacy Act. (6 Hrs.)

4. Schedule S & schedule Q of D & C act.
   Schedule M (ii) of Drug and Cosmetic Act with G.M.P. (6 Hrs.)

5. Factory Act.
   Contract Act.
   Shop & Establishment Act.

6. Sales Promotion Act.
   Standards of weight and measures Act (with reference to cosmetics)

(6 Hrs.)

Books recommended:

1. Drugs & Cosmetic Acts & Rules. Govt. of India Publiction.
2. T.B. of Forensic pharmacy by M. Mittal
3. IP, BP, NF, USP.

BCT3P01 **Cosmetic Technology**

SEE - 25
CIE – 25
Total - 50

1. Monophasic preparations like toners, mouthwash, astringents.
2. a) Wet gum method by using fixed and mineral oils.
   b) Dry gum method by using fixed and mineral oils.
3. Preparation of o/w emulsions eg. Vanishing cream and all purpose cream
4. Preparation of w/o emulsion eg. Cold cream
5. Identification of types of emulsions.
6. Preparation of suspension eg. calamine lotion, rouge, foundation ets.

BCT3P02 **Cosmetic Chemistry**

SEE - 25
CIE – 25
Total - 50

1. Qualitative test for proteins and amino acids.
2. Precipitation of proteins.
3. Effect of Ph change on proteins: Precipitation of casein from milk.
4. Quantitative estimation of glycine by Sorenson's method.
5. Colorimetric estimation of proteins by Biuret/ Lowry's method.
6. Enzyme assay. Assay of amylase activity.
7. Qualitative test for lipids.
8. Determination of Saponification value of fats.
9. Determination of Acid value of fats.
10. Determination of Iodin number of fats.
11. Estimation of Ascorbic Acid (Vit. C)
12. Identification test and analysis of Lanolin.
13. Identification test and analysis of Kaolin.
14. Identification test and analysis of Bentonite.
15. Analysis of water as per IP, BP and USP.

Minor 1(Refer Minor Basket)

SEE - 25
CIE – 25
Total - 50

Minor 2 (Refer Minor Basket)

SEE - 25
CIE – 25
Total - 50

BVS3P05 **Dermatherapy & Beauty Culture**

SEE - 25
CIE – 25
Total - 50

1. Facial
   a) Skin analysis
   b) Facial massage techniques
   c) Use of different face pack ingredients .

2. General facial treatment.

3. Herbal facial treatment.

4. Fruit Facial

5. Different types of facial treatments
   a) Facial for Mature skin
   b) Facial for sensitive skin
   c) Facial for acnefied skin

6. Aroma Therapy
   a) Aroma Facial for different skin type

BAE3P03 **Maintenance of Records as per Drug & Cosmetic laws**

SEE - 40
CIE – 10
Total - 50

Maintenance of Records for Cosmetic Industries as per FDA guidelines

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BCC3P03 **Refer CC Basket**

CIE -100

SEMESTER – IV

BCT4T01 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Learn about the preparation of advanced cosmetic products like soaps, colour cosmetic, astringents and tonics, face packs etc.

1. Bisphasic liquid formulations:
   Emulsions & Suspensions. Emulsions – types, identification of emulsions, preparation, Suspensions – Floculated and non-floculated suspensions, selection of wetting suspending and dispensing agents, preparation and stability. (6 Hrs.)

2. Preservatives- origin of contamination, factors influencing the effectiveness of preservatives, Ideal characters, uses and safety aspects (6 Hrs.)

3. Semisolid formulations:
   Ointments, paste, creams, jellies, sticks, selection of ideal bases, preparation and stability and packing. (6 Hrs.)

4. Solid formulations - Bulk powders, incorporation of different varieties of powders viz. dusting, compact, face and talcum. (6 Hrs.)

5. Incompatibility – physical and chemical (6 Hrs.)

Books recommended:

1. Mithal Text Book of Pharm formulations B 11, Pilani.
2. The Pharmacopoeia of India
3. Remingtons Pharmaceutical Practices.
4. Cooper & Gun's Dispensing for Pharmaceutical Students.
5. Husa: Pharmaceutical Dispensing: mach Publishing Co.
6. Text Book of Cosmeticology – by Harry's

BCT4T02 **Cosmetic Engineering**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

Advanced unit operations and manufacturing processes involving various equipments and engineering aspects of manufacturing processes are taught.

1. i. Humidification and air conditioning:
   Definitions, Humidity charts and uses, wet bulb theory, determination of Humidity, Humidifiers and dehumidifiers, Filtration : Theory of filtration, filter aids, selection of filters, study of filter press, Rotary, drum leaf filters, meta filters, disc filters, membrane filters, Air: Methods for quality air, HEPA filters class of air, laminar flow - +ve & -ve pressure in manufacturing area.

ii. Flow of heat:
Classification of heat flow processes, Fourier's law, Heat flow through cylinder, convection. Natural Convection, forced convection surface coefficients, overall heat transfer through boiling liquids and condensing vapours
iii. Heaters, Heat interchangers, Parallel
and countercurrent Heat Exchangers, Finned tube heat changers. (6 Hrs.)

2. i. Radiations, Black body, Emmissivity, mometry,
ii. Fundamental concepts of material & energy balances:
Units & Dimensions, dimensional analysis, material & energy balances for operations without chemical reactions. (6 Hrs.)

3. i. Flow of Fluids:
Fluid statics, monometers, Reynolds No. Bernoulli's Theorem, fluid heads, frictional losses,
ii. Measurement of fluid flow meters. Orifice meters, Venturimeter, Pitot tube,
Rotameter, displacement meter. (6 Hrs.)

4. i. Transportation of fluids:
Pipes, pipe joints,
ii. Pumps: various types of pumps: reciprocating, Piston, Duplex diaphragm, rotary, centrifugal and turbine pumps.
iii. Conveying : Belt, Apron, Buchet, Screw & pneumatic. (6 Hrs.)

5. i. Size reduction: Theory of size reduction, energy for size reduction, factors influencing size reduction, study of size reduction equipments, Crushers, Grinders, Cutting m /s, open circuit and closed circuit grinding.
ii. Study of size reduction equipments, Crushers, Grinders, Cutting m /s, open circuit and closed circuit grinding.
iii. Size separation : Types of screening equipment, Air separation method, cyclone separators, bag filters, classifiers, simple and mechanical classifiers, size separation by setting and difference in density. (6 Hrs.)

Book Recommended:

1. Bedger & Banchero : Introduction to chemical Engineering.
2. Mc-cabe & Smith : Unit operations in chemical Engineering.
3. Richardsaon & Couslson Vol. I & II : Chemical Engineering.
4. Hougen & Watson : Material & Energy Balances Part – I
5. Introduction to Chemical Engineering – Badger & Banchero.
6. Unit Operation in Chemical Engineering Mc-cabe & Smith.
7. Chemical Engineering Vol. I & II – Richarson & Coulson.

Minor 3 Refer Basket

SEE - 80
CIE – 20
Total - 100

Minor 4 Refer Basket

SEE - 80
CIE – 20
Total - 100

BCT4T05 **Introductory Pharmacology & Toxicology**

SEE - 80
CIE – 20
Total - 100

1. Pharmacology of Topical drugs, Introduction. Types of Topical drugs: (6 Hrs.)

   a Protective absorbents
   iii) Demulcents.
   iv) Emollients
   v) Astringents and antiperspirants-deodarant
   vi) Irritants, Rubefacients and Vesicants.
   vii) Sclerosing Agents.
   viii) Caustics and Escharotics
   ix) Keratolytics (Desquamating Agents)
   x) Cleansing preparations.
   xi) Miscellaneous Dermatologics- mouth washes, gargals, sunscreens, melanizers & demelanizers.

2. Miscellaneous Topical Drugs – Local antinfective agents- classification, properties, method of estimation of potency and mechanism of action of antibacterial agent, antifungal agent, ectoparasiticides (6 Hrs.)

3. Pharmacology of Cosmeceuticals used for Antiaging, Antiwrinkle, Fairness-bleaching & Sunscreens, Antidandruff, Anti inflamatary, Anti acne/pimple, Pigmentation etc. (6 Hrs.)

4. Autocoids: histamine, its pharmacological role and antihistamines. (6 Hrs.)

5. Heavy metals and metal antagonist: Symptoms and management of mercury, Arsenic, & lead poisoning. (6 Hrs.)

Books recommended:

3. Pharmacology and Pharmacotherapeutics By R.S. Satoskar and S. Bhandarkar
4. Essentials of pharmacotherapeutics By F.S.K. Barar.

BVS4T06 **Dermatherapy & Beauty Culture**

SEE - 80
CIE – 20
Total - 100

1. I) Beautician's attitude to client and professional ethics

   II) Different shapes of faces (6 Hrs.)

2. Make – up :
   A. i. Pre Make-up skin care.
      ii. Make-up Techniques – Complexion planning.
   B. Application of cosmetics
      i. Cleanser ii. Toner
      iii. Astringent. iv. Moisturizer
      v. Foundation. vi. Powder.
      vii. Blusher. viii Lipsticks. (6 Hrs.)

3. Different types of make-ups
   a) Day Make-up
   b) Evening Make-up.
   c) Party Make-up.
   d) Bridal Make-up (6 Hrs.)

4. I) Corrective Make-up for
   a) Face shapes
   b) Eyes
   c) Lips
   c) Nose

   II) Application of false eye lashes method and contraindication (6 Hrs.)

5. Hair – Structure and types of hair
   a) General problems and care for hair.
   b) Natural Dyes and Chemical Dyes
   d) Shampoo & Conditioner (6 Hrs.)

Books recommended:

1. Ann Eaton and Flurence Openshaw, Cosmetic Make – Up and Manicure.
2. A Professional Guide to Hair Dressing and Beauty Therapy by Veena Pitre
3. The Science of Cosmetics by John V. Simmons
4. Complete Beauty Book by Helen Foster
5. Vogue- Body and Beauty Book by Bronwen Meredith
6. A Guide for Health & Beauty Therapist Vol.-1 Face, hands and feet by Gaynor Winyard

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BAE4T04 **Sanskrit**

SEE - 40
CIE – 10
Total - 50

BCT4P01 **Cosmetic Technology**

SEE - 25
CIE – 25
Total - 50

1. Stability study of suspension – by use of thickening agents, flocculation agents. (6 Hrs.)

2. Preparation of ointment bases – i) hydrocarbon ii) Absorbable iii) Water Soluble iv) Water miscible. (6 Hrs.)

3. Preparation of paste & jelly bases. (6 Hrs.)

4. Preparation of simple stick bases. (6 Hrs.)

5. Preparation of face powders. (6 Hrs.)

BCT4P02 **Cosmetic Engineering**

SEE - 25
CIE – 25
Total - 50

1. i. Use on Instruments, Practice in lettering construction & uses of plain diagonal, vernier scales and scale of chords.
   ii. Projections of points, lines and planes.

2. i. Section of solids.
   ii. Elementary ideas of I st angle and IIIrd angle projectors. Top view, front view and sections.

3. i. Projections of simple solids such as cones, cylinders, prisms of pyramids with different positions and ground lines.
   ii. Isometric projections of simple solids.

4. i. To calibrate orifice meter & to obtain the coefficient of discharge for the same.
   ii. To calibrate venturimeter & to obtain the coefficient of discharge for the same.

5. i. To study sedimentation process of setting of Ca CO3 slurry and find area of thickener
   ii. To study relationship between drag coefficient & modified Reynolds No. for a body falling through liquid.
   iii. To carry out sieve analysis.

Book Recommended:

1. Elementary Drawing – N. D. Bhatt.

BCT4P03 **Minor 3 Refer Basket**

SEE - 25
CIE – 25
Total - 50

BCT4P04 **Minor 4 Refer Basket**

SEE - 25
CIE – 25
Total - 50

BCT4P05 **Dermatherapy & Beauty Culture**

SEE - 25
CIE – 25
Total - 50

1. Make-up.
   Different make-up Techniques.
   i. Use of different make-up cosmetics
   ii. Day make-up
   iii. Party make-up
   iv. Bridal make-up
   v. Make-up interview
   vi. Corrective make-up
   vii. Application of false eye lashes.

2. Different formulations for Skin and Hair care Hair

3. Hair
   i. General hair care. ii. Treatment for hair falling and dandruff

4. Hair styles & Hair setting :
   i. Formal ii. Informal
   iii. Treatment for Hair.

BCM4P01 **Community service**

SEE - 50
CIE – 50
Total - 100

BCC4P04 **Refer CC Basket**

CIE - 100

SEMESTER - V

BCT5T01 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

1. Soaps –Manufacturing technology, ingredients, types of soaps-bathing, toilet soaps, antibacterial soaps transparent soaps, liquid soaps syndates (synthetic detergent bars) (6 Hrs.)

2. I) Humectants – Introduction, drying out, types, hygroscopicity, stability, safety, skin moisturization. (6 Hrs.)

   II) Antioxidant : Introduction, General oxidative theory, measurement of oxidation and assessments of oxidant efficiency, choice of antioxidants. (6 Hrs.)

3. Skin Creams : Introduction, classification of skin creams, cleansing creams, Night and massage creams, Moisturizing, vanishing and foundation creams, Pigmented foundation creams, hand creams, hand and body cream, all purpose creams. (6 Hrs.)

4. Astringents and skin tonics : Introduction, types of astringents and astringent products and formulation aspects, antiperspirant and deodorants. (6 Hrs.)

5. Face packs and Masks: Introduction; water based systems, Rubber – Based systems, vinyl – based systems, hydrocolloid – based systems, Earth based systems, anti wrinkle preparation and their formulation aspects. (6 Hrs.)

Books Recommended:

1. Harry's Cosmeticology.
2. Cosmetic Science and Technology by Sagarin E.

BCT5T02 **Perfumes**

SEE - 80
CIE – 20
Total - 100

1. Essential oils – Production equipment, water distillation, Steam distillation, steam and water distillation, treatment of condensate water after distillation. (6 Hrs.)

2. Flower oils – Extraction with cold fat and hot fat, alcoholic extracts, absolute of enflurages and chassis. Extraction with volatile solvents, selection of solvent and extraction apparatus. (6 Hrs.)

3. Resins, Gum & Exedution – Their extraction processes e.g. Soxhlet Apparatus, Percolation, Maceration.
   Oleo Resins – Ginger oleoresins.
   Oleo gum resins – Gum Styrax, Gum Benzion and Balsams – Balsam Peru, Myrrh. (6 Hrs.)

4. Isolates – Methods of Isolation, properties & uses of following:
   Eugenol, Pinene, Linalool, Citral and Geraniol.
   Flavours – Sources and properties of Vanilla, Rose, Pineapple, Peppermint, Mango, Raspberry, Orange & Lemon. (6 Hrs.)

5. Alcohols - (6 Hrs.)

- Manufacture of ethanol.
- Purification of Ethanol
- Deodorization of ethanol.

Books recommended:

1. Perfumes, Flavours and Essential oil Industries – SBP Board.
2. Manufacture of Perfumes, Cosmetics & Detergents – Giriraj Prasad
3. Perfumes: History & Chemistry Vol-I- Dr. D.D.Wasule
4. Cosmetics: Science & Technology – Sagarin.
5. Essential oils Vol. I by Gunther.
6. Perfumes, soups & Cosmetics – Poucher.

BCT5T03 **Principle of Cosmeceutics**

SEE - 80
CIE – 20
Total - 100

1. Surface active agents:
   Classification based on chemical nature & HLB scale, determination of HLB, surface activity, Bulk properties of surfactant solution, factors affecting micelle formation, structure of micelles and liquid crystal micellar solubilisation and its significance. (6 Hrs.)

2. Interfacial Phenomenon:
   a) Cohesion adhesion and spreading, absorption at solid and liquid interfaces, absorption isotherm's applications.
   b) Electrical properties at interface, origin of charge, electric double layer, Nerst and Zeta potential, effect of electrolyte. (6 Hrs.)

3. Suspension:
   Particle interaction and behaviour, flocculation and deflocculation, sedimentation parameters, Role of wetting, controlled flocculation and structured vehicle in formulation, evaluation of suspension stability. (6Hrs.)

4. Emulsion:
   Types, detection, thermodynamic considerations, mechanism of droplet stabilization, theories of emulsification, properties and stability of emulsion, assessment of emulsion self life. (6 Hrs.)

5. Solubility:
   Mechanism of solute – solvent interaction, ideal solubility and Hildebrand – wood Scatchard equation, salvation and association, quantitative approach to the factors influencing solubility of drugs, (6 Hrs.)

Books Recommended:

1. Martin, Swarbrick. Commerate & cuhn Physical Pharmacy.
2. Burger & Lee, Physical and Technical Pharmacy.
3. Rawlins : Bentley's Text Book of Pharmaceutics.
4. Shilton and Ridgway : Physical Pharmaceutic.
5. Remingtons Pharmaceutical Practices.

Minor 5 (Refer Minor Basket)

SEE - 80
CIE – 20
Total - 100

Minor 6 (Refer Minor Basket)

SEE - 80
CIE – 20
Total - 100

BGE5T07 **Pharmacology & Interaction**

SEE - 80
CIE – 20
Total - 100

1. Study of skin and its following appendages.
   i. Nails
   ii. Hair
   iii. Sweat gland.
   iv. Sebaceous gland (6 Hrs.)

2. Study of side effects of cosmetic ingredients & products coming in contact with above body parts. (6 Hrs.)

3. Study of disorders of skin and treatment (6 Hrs.)

4. Study of disorders and treatment of teeth. Study of side effects of dentifrices mouth wash & gargals. (6 Hrs.)

5. Skin pigmentation, disorder of pigmentation, various pigmentary and depigmentary agents used on above disorders. (6 Hrs.)

Books Recommended :

1. Human Physiology – by C.C. Chatterjee.
2. Roxburis Common Skin Diseases.
3. Clinical Dermatology – An individual approach by John T. Ingrans.
4. The merck manual of Diagnosis and Therapy.
5. Unwanted Effects of Cosmetics and Drugs used in Dermatology By. J. P. Nater, Groot & Liem.
6. Harry's Cosmetology.

BVS5T07 **Cosmetic Validation**

SEE - 80
CIE – 20
Total - 100

1 **Raw Material Selection**

Functionality based that contribute to the

i. Identified Characteristics of the Finished Product (Emollient, Thickener, Binder etc).

ii. Organoleptic Characteristics (Flavour, Color, Aroma, Texture etc).

iii. Safety Characteristics (pH, Heavy metals, Microbiological, GRAS (Generally Recognised as Safe) listing,

iv. Shelf life

2 Specification Creation for raw materials

Supplier Based – Identification of the Supplier, TDS (technical data sheets) from the supplier, the standard of identity, comparison of different suppliers' specifications. Sustainability. Multiple Vendor Development

3 Packaging Material –

Specific composition (MoC) material of construction. Glass, polyethylene (PET) / (MET), polypropylene (PPE), Polypropylene (PP), Nylon etc.

4 Finished Product

i. Prototype Development and Stress Stability studies

ii. In-vitro active efficacy

iii. Stability Studies Stress, Prototype, Protocol, Pilot, Commercial batches,Toxicity study on cell lines

5 Patenting in India & Abroad.

Recommended books

1) Analytical method validation and instrument performance verification CHUNG CHAW CHAN at. al. – Wiley Blaclewell

2) Rhcology Essentials of Cosmetic and food emulsions -Brummer, Rudiger

3) Analysis of Cosmetic Products, Edited by –Ampro solvatro and Alberto Chisvrnt

4) Harry's Cosmeticology, Edited by – Dr. Martin M. Rieger.

Suggested Reads -

https://www.mdpi.com/journal/sustainability

https://www.wipo.int/

ISO 16128

http://webdictionary.personalcarecouncil.org

https://allured.omeda.com/ct

https://www.ewg.org/skindeep/

BCM5P02 Community Service

SEE - 25
CIE – 25
Total - 50

BCT5P01 Cosmetic Technology

SEE - 25
CIE – 25
Total - 50

Preparation of :

1. Cleansing Creams.
2. Cold Cream.
3. Vanishing Cream.
4. Emollient Cream.
5. Emollient Cream
6. Hand Cream
7. Face-Packs- Masks at least two 1) Clay 2) Polymer

8. Astringent preparation.
9. Night cream.

BCT5P02 **Perfumes**

SEE - 80
CIE – 20
Total - 100

1. Distillation of water and estimate boiling range before & after distillation.
2. Distillation of alcohol or any other liquid and report boiling range before & after distillation.
3. Isolation of essential oil – Extraction (from bark, leaves, flowers, seeds etc.) distillation.
4. Study of soxhlet apparatus & its use.
5. Preparation of water extracts of turmeric (Haldi), Shikaki, Ritha, Ginger.
6. Preparation of alcoholic extract of above herb.
7. Deodorization of alcohol.
8. Identification of perfumes.
9. Identification of flavors.

Books recommended:

1. Perfumes, Flavours and Essential oil Industries – SBP Board.
2. Manufacture of Perfumes, Cosmetics & Detergents – Giriraj Prasad
3. Perfumes: History & Chemistry Vol-I- Dr. D.D.Wasule
4. Cosmetics: Science & Technology – Sagarin.
5. Essential oils Vol. I by Gunther.
6. Perfumes, soups & Cosmetics – Poucher.

BCT5P03 **Principles of Cosmeceutics**

SEE - 80
CIE – 20
Total - 100

1. Determination of surface tension.
2. Determination of Interfacial Tension and spreading Coefficient.
3. To find critical micellar concentration (cmc) of the given surfactants.
4. Effect of phase – volume ratio on stability of emulsion.
5. Evaluation of Emulsion stability and shelf life.
6. To study and verify Freundlich Adsorption Isotherm.
7. To calculate sedimentation parameters of suspension.
8. Determination of globule size of emulsion- effect of emulgent

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Minor 5 (Refer Minor Basket)

SEE - 25
CIE – 25
Total - 50

Minor 6 (Refer Minor Basket)

SEE - 25
CIE – 25
Total - 50

SEMESTER -VI

BCT6T01 **Perfumes**

SEE - 80
CIE – 20
Total - 100

1. A) Fixatives – Sources, Classification, Chemical composition and uses -
   i) Animal Source – Civet, Musk, Ambergris.
   ii) Resinous Fixatives – Benzoins, Balsam, Myrrh.
   iii) Essential oil Fixatives – Sandalwood, Lemon, Cinnamon.
   iv) Synthetic Fixatives. Diethyl Pthalate, Benzyl Benzoate, alcohols.

   B) Fixatives – selection and uses of fixatives.
   C) Building of perfumes and body of the perfumes. (6 Hrs.)

2. Odorous materials manufactured synthetically by (Reaction and flow diagrams) Condensation – Coumarin, Diphenyl oxide and cinnamic aldehyde and Esterification – Benzyl acetate, Benzyl Benzoate. (6 Hrs.)

3. Odorous materials manufactured synthetically by (Reaction and flow diagrams) Nitration – Musk ambrette, musk xylene and Musk Ketone. (6 Hrs.)

4. Odorous materials manufactured synthetically by (Reaction and flow diagrams) Oxidation – Vanillin, Heleotropins, anisaldehyde, Benzaldehyde (6 Hrs.)

5. Odorous materials manufactured synthetically by (Reaction and flow diagrams) Grignard's Process – Phenyl ethyl alcohol and Hydrogenation – Citronellal from citronellal (6 Hrs.)

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Books recommended:

1. Perfumes, Flavours and Essential oil Industries – SBP Board.
2. Manufacture of Perfumes, Cosmetics & Detergents – Giriraj Prasad
3. Perfumes: History & Chemistry Vol-I- Dr. D.D.Wasule
4. Cosmetics: Science & Technology – Sagarin.
5. Essential oils Vol. I by Gunther.
6. Perfumes, soups & Cosmetics – Poucher.

BCT6T02 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

1. I) Productive creams and hand cleansers: Introduction; barrier material; protective cream and gels and formulation aspects. (6 Hrs.)

   II) Skin lightener of bleaches: Formulation aspects. (6 Hrs.)

2. Bath Preparation : Foam baths, Introduction, formulation and foam baths, types of products, product assessment, bath salts, ingredient and formulations.
   Bath Oils: introduction floating and spreading oils, dispersible or blooming oils soluble oils, foaming oils. (6 Hrs.)

3. Skin Products for Babies: introduction, skin problems in babies, functions, requirement of body products, safety of baby products, example, formulations. (6 Hrs.)

4. Coloured Make-up Preparations: Lipstick- Introduction. Ingredients of lipstick, Example formulation. Manufacture of lipsticks, Treatment lipstick, lip salves, liquid lipsticks. Rouge Introduction, Dry rouge, Wax based rouge, cream rouge, liquid rouge, (6 Hrs.)

5. Eye make-up, Introduction, Mascara, Eyeshadow, Eyeliner, Eyebrow pencil. (6 Hrs.)

Books Recommended:

1. Harry's Cosmetology.
2. Cosmetic Science and Technology by Sagarin E.

BCT6T03 **Principles of Cosmeceutics**

SEE - 80
CIE – 20
Total - 100

1. Distribution phenomenon:
Distribution of solute between immiscible liquids, ionic dissociation and molecular association influencing partitioning, Applications of distribution phenomenon. (6 Hrs.)

2. Colloidal Dispersion:
Properties of colloids – Optical, kinetic and electrical and their applicability in determining molecular weight of polymer, stability of colloiadal systems mechanism of peptization. (6 Hrs.)

3. Rheology:
Types of flow behaviour, thixotropy and thixotropic co-efficient measurement of various reheological properties, factors influencing reheology of dispersed systems. (6 Hrs.)

4. Micromeritics:
Particle size, size distribution, shape and surface area and their determination in heterogeneous systems. Porosity density and packaging arrangements in flow properties and their influence on processing of solid preparations. (6 Hrs.)

5. Complexation and methods of detection of complexes. (6 Hrs.)

Books Recommended:

1. Martin, Swarbrick. Commerate & cuhn Physical Pharmacy.
2. Burger & Lee, Physical and Technical Pharmacy.
3. Rawlins : Bentley's Text Book of Pharmaceutics.
4. Shilton and Ridgway : Physical Pharmaceutic.
5. Remingtons Pharmaceutical Practices.

BCT6T04 **Cosmetic Engineering**

SEE - 40
CIE – 10
Total - 50

1. Mixing: Agitation of liquids, study of mixers for liquid – liquid gas liquid, dry powder, pastes & plastic masses. (6 Hrs.)

2. Distillation : Raoult's law & Henry's law, theory of distillation of binary mixtures of miscible, immiscible and partially miscible liquids, study of distillation equipment used for simple vacuum steam, reflux & molecular distillation (6 Hrs.)

3. Separation of Azeotropes (Binary & Ternary) and liquids of similar volatility. Rectification & fractionation. (6 Hrs.)

4. Evaporation: factors affecting evaporation, study of short tube long tube, agitated, film, evaporator performance of rubular evaporator, improving efficiency of evaporation. (6 Hrs.)

5. Drying : Definition purpose of drying, theory of drying / loss on drying, moisture content and equilibrium moisture content, classification of dryers, study of tray, Rotary, Vacuum, fluidized bed dryers. (6 Hrs.)

Book Recommended :

1. Introduction to Chemical Engineering – Badger & Banchero.
2. Unit Operation in Chemical Engineering Mc-cabe & Smith.
3. Chemical Engineering Vol. I & II – Richarson & Coulson.

Minor 7 (Refer Minor Basket)

SEE - 80
CIE – 20
Total - 100

BGE6T08 Pharmacology & Interaction

SEE - 40
CIE – 10
Total - 50

1. Allergy and antigen – antibody reaction, types of Hypersensitivity reaction and disorders due to hyper sensitivity reactions and a topic dermatitis. (6 Hrs.)

2. Dermatitis – various types and their clinical feature. (6 Hrs.)
   - i Acute Toxic contact dermatitis.
   - ii Allergic contact dermatitis.
   - iii Irritant contact dermatitis.
   - iv Phototoxic contact dermatitis.

3. Disorders and treatment of feet, foot cosmetics. (6 Hrs.)

4. Methods for animal testing for safety evaluation of cosmetic (6 Hrs.)

5. Dermatological testing as per BIS specification patch testing, repeated insult patch testing cumulative irritation test photoallergic test phogotoxicity test. (6 Hrs.)

Books Recommended :

1 Human Physiology – by C.C. Chatterjee.
2 Roxburgs Common Skin Diseases.
3 Clinical Dermatology – An individual approach by John T. Ingrans.
4 The Merck Manual of Diagnosis and Therapy.
5 Unwanted Effects of Cosmetics and Drugs used in Dermatology By. J. P. Nater, Groot & Liem.
6 Harry's Cosmetology.

BCT6P01 **Perfumes**

SEE - 40
CIE – 10
Total - 50

1. Synthesis of odorous material (Any one) by following methods-
   a) Condensation (Coumarin /Diphenyl oxide / cinnamic aldehyde)
   b) Esterification (Benzyl acetate/ Benzyl Benzoate.
   c) Hydrogenation (Citronellal from citronellal)
   d) Nitration (Musk ambrette/ musk xylene /Musk Ketone)
   e) Oxidation (Vanillin/ Heleotropins/ anisaldehyde/ Benzaldehyde)

2. Peppermint oil – Assay – for esters and ketones

3. Clove oil – determination of phenol contents

4. Wintergreen oil – determination of methyl salicylate content
   - Test for acidity.

Reference book

1) Indian Pharmacoepia 2007 Vol. I, II, III
2) Manufacture of Perfumes, Cosmetics & Detergents – Giriraj Prasad
3) Perfumes: History & Chemistry Vol-I- Dr. D.D.Wasule

BCT6P02 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

1. Rouge.
2. Lipstick
3. Deodorant preparations
4. Lotions – Cleansing and mustering
5. Bath oils and bath foam
6. Eye shadow, mascara
7. Soap Preparation
8. Baby Product at least two

BCT6P03 **Principles of Cosmeceutics**

SEE - 80
CIE – 20
Total - 100

1. Evaluation of suspension stability
2. To find out the partition coefficient & distribution of drug between two phases.
3. To determine molecular weight by viscosity measurement method
4. To verify the Hofmeister series for the flocculation of colloids.
5. Determination of globule size of emulsion – effect of internal phase.
6. To study Krafft point and Cloud point
7. Determination of Angle of repose and study the flow properties of powders.
8. To study the bulk density and porosity of powders.

BCT6P04 **Cosmetic Engineering**

SEE - 40
CIE – 10
Total - 50

1. To evaluate mass transfer coefficients for mass transfer from the surface of liquid into the atmosphere.
2. To verify Rayleigh's equation for given Binary system.
3. To construct boiling point diagram for given binary system.
4. To prepare ternary phase diagram of Binodal curve & to obtain timeline relationship for ternary system.
5. To obtain critical moisture content of given material & to compute equations for falling and const. Rate period.
6. To study effect of speed on mixing of liquids.

Minor 7 (Refer Minor Basket)

SEE - 25
CIE – 25
Total - 50

BVS6P08 **Cosmetic Validation**

SEE - 40
CIE – 10
Total - 50

Practical based on the following topics

1. Identified Characteristics of the Finished Product (Emollient, Thickener, Binder etc).
2. Organoleptic Characteristics (Flavour, Color, Aroma, Texture etc).
3. Supplier Based – Identification of the Supplier, TDS (technical data sheets) from the supplier, the standard of identity, comparison of different suppliers' specifications. Sustainability. Multiple Vendor Development
4. Prototype Development and Stress Stability studies

At least four practicals performed in each category

BOJ6P01 **Industrial Training**

SEE - 100
CIE – 100
Total - 200

1. Six week practical training in National / International Industry or Organization registered with proper Government/ Apex body

2. The relevant certificate is to be submitted to the college before SEE.

3. The SEE will be based on report of Industrial training in brief in maximum 20 pages. The presentation PPT will be evaluated for 50 marks and Viva voce for 50 marks.

SEMESTER - VII

BCT7T01 **Perfumes & Colours**

SEE - 80
CIE – 20
Total - 100

1. Specially perfumed products – formulation and processing of :
   a. Alcoholic fragrance solution
   b. Emulsified and solid fragrances.
   c. Solubilized perfumes. (6 Hrs.)

2. Packaging of perfumes with special emphasis on aerosol products.
   Aerosol: Principle & Mechanism.
   Method of preparation, cold fill method & press fill method
   Packaging and components. (6 Hrs.)

3. 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.
   (6 Hrs.)

4. Revision, adaptation and incorporation of perfumes in skin care cosmetic products like creams, lotions, powders, soaps. (6 Hrs.)

5. a) Revision, 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. (6 Hrs.)

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

BCT7T02 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

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. (6 Hrs.)

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.
   (6 Hrs.)

3. I) Hair Tonics & Conditioners:
Introduction – formulation of medicated hair tonics, conditioners, evaluation of conditioning, hair thickeners, rinses. (6 Hrs.)

II) Hair strengtheners:
Introduction, hot comb method, caustic preparations, chemical hair reducing preparations.

4. Hair colorants:
Introduction – Hair coloring 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.
(6 Hrs.)

5. Permanent Waving and Hair Strengtheners :
Introduction – chemistry of the hair waving, evaluation of permanent waving, hot waving processes, cold waving processes. Topic 'warm air' waves. Roller and pin permanent waves, instant permanent waves, perfuming of thioglicolate lotions, tonicity, hair strengtheners preparations.
(6 Hrs.)

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

BCT7T03 **Plant Design**

SEE - 80
CIE – 20
Total - 100

1. Design considerations: Diff. Materials of construction. Material selection, Corrosion & Physical, Mechanical, Iron Steel, Aluminum and their alloys. (6 Hrs.)

2. Heat Exchangers L: Introduction, Types, Design of Shell and Tube Heat Exchangers.
(6 Hrs.)

3. Pressure Vessels : Introduction, Operating conditions, selection of material, Vessels operating at low temperature, Vessels operating at elevated temperatures, Design consideration, Design of shell and its components. (6 Hrs.)

4. Design of machine elements : Shafts, Keys, Pins, Couplings belts and Pulleys, Chain drivers, Gear Drives, Riveted Joints, Welded Joints, Treaded Fasteners. (6 Hrs.)

5. Selection of Plant location, Plant site, Factory building: Study of different factors affecting selection. (6 Hrs.)

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

BCT7T04 **Quality Assurance Techniques.**

SEE - 80
CIE – 20
Total - 100

1. i. Importance of quality control in cosmetic preparations & guidelines for hygienic manufacture of cosmetics.

   ii. ISO: Its significance, role and importance in cosmetic industry.
   Validation of cosmetic manufacturing. (6 Hrs.)

2. Stability testing of various cosmetics products – accelerated stability study.
   - Study of Rheological properties of semisolid preparation.
   - ICH guidelines. (6 Hrs.)

3. i. Evaluation of components (active ingredients) and finished products e.g. Shampoos, Hair dyes, depilatories, tooth pastes, powders, sun screen preparation, lipsticks and other common cosmetic products. Examples – soaps, Skin creams, traditional cosmetics, skin lotions, face wash.

   ii. Testing of packaging components used for cosmetic products. (6 Hrs.)

4. Colorimetric, UV and Visible spectroscopy - Basic Principles, essential parts of spectrophotometers, uses and application of spectrophotometer. Spectrophotometric titration. (6 Hrs.)

5. Chromatography- Introduction and classification in General Principles, type – columns, paper and thin layer chromatography and their applications. (6 Hrs.)

Books recommended:

1. A.O.A.C.
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. Vogal : Quantative inorganic Analysis.
9. Ewing : Instrumental Method of Chemical Analysis
10. Connoers : Text Book of Pharmaceutical Analysis
11. Higuchi : Pharmaceutical Analysis
12. ISI Bookletes.
13. Microbialogy by Pelzer & Reed
14. Microbialogy by Sally.

BCT7T05 **Herbal Cosmetics**

SEE - 80
CIE – 20
Total - 100

1. Study of following herbs used in skin care cosmetic formulations with reference to their biological and geological sources, chemical constituents, cosmetic or cosmeceutical uses
   Aloe, Babhool, Bawchi, chandan, cucumber, Haldi, Ambahaldi, Jeshthamadh, lodra, neem, (6 Hrs.)

2. Study of following herbs used in Hair care cosmetic formulations with reference to their biological and geological sources, chemical constituents, cosmetic or cosmeceutical uses

Brahmi, Jatamanasi, mehandi, Nagarmotha, ritha, shikekai, kapur kachari, (6 Hrs.)

3. Study of storage of herbal actives in cosmetics and store house. (6 Hrs.)

4. Preparation of herbal actives in cosmetics for commercial market. (6 Hrs.)

5. Future scope of Herbal ingredients in Cosmetic Industry (6 Hrs.)

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

BCT7T06 Elective-1(Refer Basket)

SEE - 80
CIE – 20
Total - 100

A. Personnel Management in Cosmetic Industries

1. Personnel Management:
Different methods of developing personnel skills. (6 Hrs.)

2. Concept, Nature, Scope and Significance of Personnel Function in Modern Organization, Evaluation and Philosophy of Management of Human Resource, Dimensions of Human Resource, Management Policies, Present Status of Human Resource Management In India. Planning and Staffing Policy: Job Evaluation, Job Analysis, Job Description, Manpower Planning. (6 Hrs.)

3. Action Areas: Selection, recruitment, placement, performance appraisal, transfer, promotion, demotion and discharge. Development of Human Resources - HRD Philosophy and Process, Nature, Objectives, Scope of Training, Development and Performance Appraisal. Compensation: Need for National Wage Policy, Job Evaluation, Wage Structure, Fringe Benefits, Financial and Non-Financial Benefits, Personnel Control Research and Audit. (6 Hrs.)

4.Different management development programmes. Orientation Appreciation, Application and Education, measuring impact of training and development. (6 Hrs.)

5**.** Evaluation of salesman's performance.
Practical experience – Case studies on related aspects. (6 Hrs.)

Recommended Readings:

1. Fundamental of Business Organization & Management – .Y. K. Bhushan
2. Industrial Management –I. K. Chopda and A. M. Sheikh,
3. Industrial organization and Management Sherlekar an dSherlekar
4. Industrial Management – R. K. jain,
5. Business Organization and Management – Shukla M. S.
6. Dessler, Gary, "Human Resource Management", New Delhi, Pearson Education Asia.
7. Durai, Pravin, "Human Resource Management," New Delhi, Pearson.
8. Noe, Raymond A., Hollenbeck, John R, Gerhart, Barry, Wright, Patrick M., "Human Resource Management: Gaining a Competitive Advantage," New Delhi,
9. McGraw-Hill.

10. Mathis, Robert L. and Jackson, John H., "Human Resource Management," New Delhi, Thomson.
11. Gomez, Meja, Balkin, Cardy, "Managing Human Resources," New Delhi, Pearson Education.
12. Aswathappa, K., "Human Resource Management", Text and Cases. New Delhi, Tata McGraw – Hill.
13. Snell, Scott, and Bohlander, George, "Human Resource Management," New Delhi, Cengage Learning.
14. Mamoria and Rao, "Personnel Management", New Delhi, Himalaya Publishing House.

OR

B. Production Management in Cosmetic Industries

1. Production Management: Objectives & Policies, Types of production, Plant Location, decision Plant Layout, Types of Layouts. (6 Hrs.)

2 Production planning and control, Industrial quality control, statistical quality control methods, TQM m ISO systems Job evaluation. (6 Hrs.)

3 Materials Management, Scientific Purchasing, Inventory control, EOG model, inventory classification, ABC analysis, cost elements inventory Selection of vendors and vendor rating. (6 Hrs.)

4 Maintenance Management, Material handling systems, sanitation and plant utilities, stores management. (6 Hrs.)

5. i. Entrepreneurial Development: Process of generating business ideas, Technical & Economic feasibility - development detailed project report for implementation.
ii. Small scale industries and cottage industries with emphasis on soaps, Detergents and other Cosmetic Industries. Role of small scale industries in development economy of India. Problems small scale industries. Problems of prospects small scale Industries Industrial safety. (6 Hrs.)

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 Sherlekar an dSherlekar
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 Mallikarjun Rao.
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.
13. Barat Nikhil "Production Management and Control.
14. Moore F.G. "Manufacturing Management"
15. Ammer D.S. "Manufacturing Management and Control"
16. Cundiff E.Q. and Still R.R. "Basic Marketing"
17. Griffin M.C. "Drug and Cosmetic Packaging"
18. Journals:
    i. Manufacturing Chemist and Aerosal News.

ii. Drug and Cosmetic Industry.
iii. Journal of Association of Cosmetic Chemists.

BCT7T07 **Research Methodology**

SEE - 80
CIE – 20
Total - 100

Course Outcomes

➢To enable the students to know about the information needs of Cosmetics.

➢To introduce the concept of Scientific Research and the methods of conducting Scientific Enquiry and

➢To introduce the Statistical Tools of Data Analysis.

1. Research – Qualities of Researcher – Components of Research Problem – Various Steps in Scientific Research – Types of Research – Hypotheses Research Purposes - Research Design – Survey Research – Case Study Research.
2. Data Collection – Sources of Data – Primary Data – Secondary Data - Procedure Questionnaire – Sampling methods – Merits and Demerits – Experiments – Observation method – Sampling Errors - Type-I Error & Type-II Error.
3. Statistical Analysis – Introduction to Statistics – Probability Theories – Conditional Probability, Poisson Distribution, Binomial Distribution and Properties of Normal Distributions – Hypothesis Tests – One Sample Test – Two Sample Tests / Chi-Square Test, Association of Attributes - Standard deviation – Co-efficient of variations .
4. Statistical Applications – Correlation and Regression Analysis – Analysis of Variance – Partial and Multiple Correlation – Factor Analysis and Conjoint Analysis – Multifactor Evaluation – Two-Factor Evaluation Approaches.
5. Research Reports – Structure and Components of Research Report – Types of Report, characteristics of Good Research Report, Pictures and Graphs, Introduction to SPSS.

REFERENCES

1.Panneerselvam, R., RESEARCH METHODOLOGY,
2. Prentice Hall of India, New Delhi, 2004. Kothari CR , RESEARCH METHODOLOGY-METHODS AND TECHNIQUES,

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BCT7P01 **Perfumes & Colors**

SEE - 80
CIE – 20
Total - 100

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

BCT7P02 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

1. Shampoos at least two preparation
2. Hair setting preparations (Men & Women both)
3. Hair tonics
4. Hair conditioners
5. Hair color preparations
6. Hair waving preparations
7. Hair straightner
8. Hair strengthner

BCT7P03 **Plant Design**

SEE - 25
CIE – 25
Total - 50

Sheets Based on –

1. Design of Pressure vessel.
2. Design of Heat Exchanger
3. Various machine elements such as screw threads, Nuts and Knots, Rivets, Shafts, Keys, coupling, Joints etc.
4. Design of Nut and bolts

BCT7P04 **Quality Assurance Techniques**

SEE - 25
CIE – 25
Total - 50

1. Evaluation of cosmetic products like:
    i. Shampoos – Synthetic, Herbal, Antidandruff.
    ii. Hair Dye
    iii. Creams
    iv. Face Powders
    v. Tooth Paste
    vi. Tooth Powders
    vii. Depilatory

2. Raw Material analysis as per BIS
    i. Stearic Acid
    ii. Zinc Oxide
    iii. Sodium Lauryl Sulphate
    iv. Calcium carbonate
    v. Talc

3. Study of rheological properties of cream, shampoo, powder.

BCT7P05 **Herbal Cosmetic**

SEE - 80
CIE – 20
Total - 100

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, kapur kachari,

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SEMESTER – VIII

BCT8T01 **Perfumes & Colours**

SEE - 80
CIE – 20
Total - 100

1. Introduction: colour, croma, light and colour, colour system, relation of colour and emotions, pigment, dye, lake and tonner, hue, value, bleed, tones, highding power, certified colours. (6 Hrs.)

2. Classification of colors.- Natural (sources, properties), Synthetic based on chemical structures, in organic colours. (6 Hrs.)

3. Preparation of colour solutions and incorporation of colours in skin care and hair care products including soaps. (6 Hrs.)

4. Study of colours with specific reference to IS 4707 and schedule Q of D & C act. As per guidelines in India and other countries. (6 Hrs.)

5. Determination of colors and Color matching of marketed products. (6 Hrs.)

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

BCT8T02 **Cosmetic Technology**

SEE - 80
CIE – 20
Total - 100

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. (6 Hrs.)

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. (6 Hrs.)

3. 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 cullus preparations, chilblain preparations, Athlete's foot preparations, other developments. (6 Hrs.)

4. Manicure Preparations:

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

(6 Hrs.)

5. 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, luster, the toothbrush and tooth brushing, Denture cleansers.

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

(6 Hrs.)

Books recommended:

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

BCT8T03 **Plant Design**

SEE - 80
CIE – 20
Total - 100

1. Process hazards & safety measure in equipment design: Introduction, Hazards in process Industries, analysis of hazards, Safety Measures, Safety measure in equipment designs.

(6 Hrs.)

2. Reaction vessel : Material of construction, agitation, classification of reaction vessels, heating systems, design, consideration. (6 Hrs.)

3. Agitators : Introduction, types, power requirement, Design of agitation system components, Drive for Agitators. (6 Hrs.)

4. Storage Vessels : Storage Vessels for Fluids, Non-volatile fluids, Volatile liquids gases, design of tanks, nozzles and mountings. (6 Hrs.)

5. Driers : Introduction, Types, design considerations. (6 Hrs.)

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

BCT8T04 **Quality Assurance Techniques.**

SEE - 80
CIE – 20
Total - 100

1. I) Study of environmental isolates.
II) Microbial Analysis:
Classification of Bacterial & morphology : cell structure.
1. General characteristics of yeast, Moulds, protozoa & algae, occurrence, morphology, motility & reproduction.
2. Stains & staining techniques in microbiology.

3. Nutritional requirement for microbes:
   Nutritional classification of bacteria photographs, chetrops, Type of media:
   A) Synthetic media
   B) Non-synthetic media.
   C) Isolation & maintenance of pure culture
   i. Streak plate & pour plate method of isolation.
   ii. Enrichment culture techniques.
   iii. Serial dilution, Techniques. (6 Hrs.)

2. Microbial Control:
   - Sterilization, Disinfections, Antiseptic, Sanitizer, Germicides, Microbiostasis, Antimicrobials, Preservatives.
   - Factors influencing antimicrobial activity.
   - Factors related to the killing agent, intensity, concentration, time of action & temperature.
   - Factors related to the organism being killed: Total no. of organisms being killed, kind of organism, physiological state of organism & environmental conditions.
   - Mechanism of cell injury.
   - Physical control
   - Chemical Control
   - Standardization of disinfectant phenol co-efficient.
   - Antimicrobial Assay (6 Hrs.)

3. Principle methods of analysis to enumerate various types of organisms e.g. APC. (6 Hrs.)

4. Isolation of identification of gram +ve & -ve organisms. (6 Hrs.)

5. Efficacy testing of preservative. (6 Hrs.)

Books recommended:

1. A.O.A.C.
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. Vogal : Quantative inorganic Analysis.
9. Ewing : Instrumental Method of Chemical Analysis
10. Connoers : Text Book of Pharmaceutical Analysis
11. Higuchi : Pharmaceutical Analysis
12. Microbialogy by Pelzer & Reed

BCT8T05 **Herbal Cosmetics**

SEE - 80
CIE – 20
Total - 100

1. Study of following herbs used in skin care cosmetic formulations with reference to their biological and geological sources, chemical constituents, cosmetic or cosmeceutical uses
   Raktachandan, tulsi, majistha, papaya, lemon carrot, orangepeel, grapefruit (citrus paradise), kesar, lotus, ficus golmerata (umber), Akarkara, beetroot, palash, (6 Hrs.)

2. Study of following herbs used in Hair care cosmetic formulations with reference to their biological and geological sources, chemical constituents, cosmetic or cosmeceutical uses
hibiscuss (Jaswand), Bhringaraj, curry leaves, neem, arnica, seetaphal (Plant and seeds) (6 Hrs.)

3. Various methods of extraction employed for herbal constituents. (6 Hrs.)

4. Formulating appropriate cosmetic products by incorporating herbal actives in skin care products.: Creams, powder, lotion (6 Hrs.)

5. Formulating appropriate cosmetic products by incorporating herbal actives in hair care products: Hair oil, shampoo, hair tonics (6 Hrs.)

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

BCT8P01 Perfumes & Colors

SEE - 80
CIE – 20
Total - 100

1. Preparation of color solution - Water soluble colors, Oil soluble colors

2. Incorporation of colors (Quantity) and perfume (q. s.)
   a) Powders
   b) Lipsticks
   c) Eye Shadow
   d) Rouge
   e) Compacts
   f) Maskara
   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 colors and Color matching of marketed products.

BCT8P02 Cosmetic Technology

SEE - 80
CIE – 20
Total - 100

1. Shaving preparations
2. Foot preparations
3. Sunscreening preparations
4. Manicure Preparations
5. Tooth preparations
6. Mouth wash

Two Preparations in each category

BCT8P03 **Plant Design**

SEE - 25
CIE – 25
Total - 50

Sheets Based on –

1. Design of Dryer.
2. Design of reaction vessel
3. Design of Agitator
4. Design of Rivets, Shafts, joints

BCT8P04 **Quality Assurance Techniques.**

SEE - 80
CIE – 20
Total - 100

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. Micrological testing of raw materials & finished products.

BCT8P05 **Herbal Cosmetic**

SEE - 80
CIE – 20
Total - 100

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)

BCT8T06 **Elective-2(Refer Basket)**

SEE - 80
CIE – 20
Total - 100

A. Marketing Management of Cosmetics

1. Marketing Management:

Sales forecasting – Objects, Methods, Budget Preparation, marketing Research, Consumer & Product research.

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

3. International Marketing and E-commerce activities. Packaging, Importance of packaging in marketing cosmetics, latest trends. Branding.
Market Segmentation - Different methods of segmenting market.

4. Marketing :Meaning, Philosophies of marketing functions scope and evolution. Different Demand states and formal marketing tasks, Marketing environment,

5. Concept of product, product line and mix. New products, development and launch. Pricing - different methods, under different market conditions. Distribution, different channels of distribution - factor affecting channels choice, direct marketing multilevel marketing, telemarketing.

6. Promotion – Different elements of promotion, personal selling, advertising, sales promotion and public relations. *Supply chain management, customer relationship management.*

1. Marketing Management by Dr. Philip Kotler – PHI
2. Marketing Management by Stanton
3. Marketing Management by Rajan Saksena , TMH
4. Production Management by Chunnawala, H.Pals.
5. Marketing Management by Puffa
6. Marketing Management by by M. Telsang.

B. Financial Management of Cosmetics

Course outcomes

➢To know the various sources of finance

➢To understand the various uses for finance

➢To familiarize oneself with the techniques used in financial management.

1. Financial Management – Financial goals - Profit vs. Wealth Maximization; Finance Functions – Investment, Financing and Dividend Decisions – Cost of Capital – Significance of Cost of Capital – Calculation of Cost of Debt – Cost of Preference Capital – Cost of Equity Capital (CAPM Model and Gordon's Model) and Cost of Retained Earnings – Combined Cost of Capital (weighted/Overall).

2. Capital Budgeting – Nature of Investment Decisions – Investment Evaluation criteria – Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI), Payback Period, Accounting Rate of Return (ARR) – NPV and IRR comparison.

3. Operating and Financial Leverage – Measurement of Leverages – Effects of Operating and Financial Leverage on Profit – Analyzing Alternate Financial Plans - Combined Financial and Operating Leverage – Capital Structure Theories - Traditional approach - M.M. Hypotheses – without Taxes and with Taxes – Net Income Approach (NI) – Net Operating Income Approach (NOI) - Determining capital structure in practice.

4. Dividend Policies – Issues in Dividend Decisions – Relevance Theory – Walter's Model – Gordon's Model – Irrelevance Theory – M-M hypothesis - Dividend Policy in Practice – Forms of Dividends – Stability in Dividend Policy – Corporate Dividend Behaviour.

5. Management of Working Capital – Significance and types of Working Capital – Calculating Operating Cycle Period and Estimation of Working Capital Requirements – Financing of Working Capital and norms of Bank

Finance – Sources of Working capital – Factoring services– Various committee reports on Bank Finance – Dimensions of Working Capital Management.

REFERENCES

1. Khan MY, Jain PK, BASIC FINANCIAL MANAGEMENT, Tata McGraw Hill, Delhi , 2005.
2. Chandra, Prasanna,. FINANCIAL MANAGEMENT, Tata McGraw Hill, Delhi.
3. Bhabatosh Banerjee, FUNDAMENTALS OF FINANCIAL MANAGEMENT, PHI, Delhi, 2010
4. Chandra Bose D, FUNDAMENTALS OF FINANCIAL MANAGEMENT, PHI, Delhi, 2010
5. Preeti Singh, FUNDAMENTALS OF FINANCIAL MANAGEMENT, Ane, 2011.

BRPT8P01 **Project (Review /Research)**

SEE - 25

CIE – 25

Total - 50

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Scheme and syllabus

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Submitted by

Board of Studies

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