

**2.RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR  
FACULTY OF HOME SCIENCE  
DIRECTION NO. 21 OF 2016**

**DIRECTION RELATING TO THE EXAMINATION LEADING TO THE  
DEGREE OF MASTER OF COSMETIC TECHNOLOGY  
(CHOICE BASED CREDIT SYSTEM SEMESTER PATTERN)  
IN  
THE FACULTY OF HOME SCIENCE**

**(Issued under Section 14(8) of the Maharashtra Universities Act, 1994)**

WHEREAS, Maharashtra Universities Act, 1994 (hereinafter referred to as Act) has come into force from 22<sup>nd</sup> July, 1994 and was amended from time to time,

**AND**

WHEREAS, the University Grants Commission, New Delhi vide letter No.D.O.No.F-2/2008/(XI Plan), dated 31 January 2008 regarding new initiatives under the XI Plan – Academic reforms in the University has suggested for improving quality of higher education and to initiate the academic reform at the earliest,

**AND**

WHEREAS, the Task force in Cosmetic Technology of Home Science faculty in their meeting held during 8<sup>th</sup> March 2016 prepared the syllabi and scheme of examination for the Master of Cosmetic Technology (choice based credit system semester pattern), and recommended for starting it from the academic session 2016-17.

**AND**

WHEREAS, the Dean, Faculty of Home Science has consented to the syllabi and the scheme of examination for the award of Master of Cosmetic Technology degree.

**AND**

WHEREAS the Hon'ble Vice-Chancellor has accepted the syllabus along with draft direction on the behalf of Academic Council on 8<sup>th</sup> June 2016 under section 14(7) of Maharashtra University Act 1994.

**AND**

WHEREAS the Hon'ble Vice-Chancellor has accepted the syllabus along with draft direction on the behalf of Management Council on 14<sup>th</sup> June 2016 under section 14(7) of Maharashtra University Act 1994.

**AND**

Whereas, ordinance making is a time consuming process, therefore, I, Dr. S. P. Kane, Vice Chancellor Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of powers vested under Section 14(8) of the Act do hereby issue the following Direction.

1. This Direction may be called "Direction relating to examinations leading to the Degree of Master of Cosmetic Technology (choice based credit system semester pattern)in the Faculty of Home Science.
2. The direction shall come into force from the date of its issue by Hon'ble Vice Chancellor and shall remain in force till the relevant ordinance comes into being in accordance with the provisions of the Act.
3. The duration of the Master of Cosmetic Technology (choice based credit system semester pattern) course shall be of Two academic years consisting of Four semester with University examinations at the end of each semester namely:
  - a) Master of Cosmetic Technology Semester I Exam.
  - b) Master of Cosmetic Technology Semester II Exam.
  - c) Master of Cosmetic Technology Semester III Exam.
  - d) Master of Cosmetic Technology Semester IV Exam.
4. The examinations shall be held at such places and dates which are notified by the University.

**ELIGIBILITY TO THE COURSE:**

5. Subject to their compliance with the provisions of this direction and of other ordinances in force from time to time, the following applicant candidates shall be eligible for the admission to Master of Cosmetic Technology and examinations their of

“Candidates shall have passed Bachelor of Cosmetic Technology examination or equivalent from Rashtrasant Tukadoji Maharaj Nagpur University or any other statutory University of India or abroad, recognized by the UGC or any other concerned apex regulatory authority/ body of India.”

6. a) **Master of Cosmetic Technology** (choice based credit system semester pattern) **Semester I Examination**

Students who have fulfilled the eligibility criteria as mentioned in Section 5 and have been admitted to this course in Semester I.

- b) The ATKT rules for admission for the Master of Cosmetic Technology Course (choice based credit system semester pattern) (Theory and Practical as separate passing head) shall be as given in the following table-

Admission to Semester	Candidate should have passed in all the subjects of the following examination of R.T.M. Nagpur University	Candidate should have passed at least half of the passing heads of the following examinations
Semester I	As provided in the para 6 of the direction	-----
Semester II	-----	-----
Semester III	-----	Semester I and II taken together
Semester IV	-----	Semester I, II and III taken together

- 7) Without prejudice to other provisions of Ordinance no. 6 relating to the examination in general, provisions of Para 5, 8, 9, 10, 26, 31 and 32 of the said ordinance shall apply to every student admitted to this course.
- 8) The fees for the tuition, examination, laboratory and other fees shall be as prescribed by the university from time to time.
- 9) (a) The scope of the subjects shall be as prescribed in the syllabus.  
(b) The medium of instruction and examination shall be English.
- 10) The number of papers and maximum marks assigned to each paper and minimum marks/grade, an examinee must obtain in order to pass the examination shall be as prescribed in appendix A1, A2, A3 and A4 appended with this direction.
- 11) The examinee at each of the examination shall have option of not being declared successful at the examination in case he/she does not secure a minimum of grade equivalent to 55% marks at the examination. This option will have to be exercised every time the application is submitted to any of the examinations. Once this option is exercised, the option shall be binding on the examinee and it shall not be evoked in under any circumstances.
- 12) The classification of the examinee successful at the semester and examination at the end of fourth semester examination shall be as per the rules and regulations of credit based semester pattern as prescribed in appendix, appended with this direction.
- 13) The provisions of direction no. 3 of 2007 for the award of grace marks for passing an examination, securing higher grade in subject(s) as updated from time to time shall apply to the examination under this direction.
- 14) The names of the successful examinee passing the examination as a whole in the minimum prescribed period and obtaining prescribed number of places securing the grades equivalent to first and second division shall

be arranged in order of merit as provided in ordinance 6 relating to examination in general.

- 15) The unsuccessful candidate failing in scoring passing marks in sessional/internal assessment shall be allowed to appear for internal/sessional examination and college should send the marks to University before the commencement subsequent semester examination.
- 16) No candidate shall be admitted to an examination under this direction, if he/she has already passed the same examination of this university or of any other university.
- 17) Examinee successful at the final examination shall on payment of the prescribed fees, will be entitled for the award of the degree in the prescribed form signed by the Vice-Chancellor.
- 18) This course is based on credit based semester pattern and therefore, it will be also regulated by guidelines and regulation given in appendices which are part of this direction.
- 19) With the issuance of this direction The Direction No. 20 of 2012, governing the examinations leading to award of Master of Cosmetic Technology (Credit based semester system) in the Faculty of Home Science shall stand repealed in phasic manner.

I, further, direct that the aforesaid Direction shall come into force from the date of issuance and shall remain in force till the relevant Ordinance comes into being, in accordance with the provisions of the Maharashtra Universities Act, 1994.

Sd/-

Nagpur  
Date : 21-6-2016

( Dr. Siddharthavinayaka P. Kane)  
Vice Chancellor

**Examination leading to Master of Cosmetic Technology**  
Scheme of teaching and examination under semester pattern Choice Based  
Credit System (CBCS)

**APPENDIX – A1**

<b>Semester-I : Master of Cosmetic Technology</b>											
S. No.	Subject Code	Theory/Practical	Teaching Scheme (Hrs/week)			Credits	Examination Scheme				
			Theory	Practical	Total		Duration (Hrs)	Max. Marks		Total Marks	Min. Passing Marks
								External Marks	Internal/sessional Marks		
1	1MCT-T-1	Core-I- Formulation & Development –I (FDI)	4	--	4	4	3	80	20	100	50
2	1MCT-T-2	Core-II- Quality Assurance Technique-I (QAT I)	4	--	4	4	3	80	20	100	50
3	1MCT-T-3	Core-III- Research Methodology (RM)	4	--	4	4	3	80	20	100	50
4	1MCT-T-4	Core-IV- Advanced Cosmetic Technology –I (ACT I)	4	--	4	4	3	80	20	100	50
5	1MCT-P-1	Core I Practical Formulation & Development –I (FDI)	--	8	8	4	6	80	20	100	50
6	1MCT-P-2	Core II Practical Quality Assurance Technique-I (QAT I)	--	8	8	4	6	80	20	100	50
7	1MCT-P-3	Core IV Practical Research Methodology (RM)	--	2	2	1	--	--	25	25	12
<b>Total</b>			<b>16</b>	<b>18</b>	<b>34</b>	<b>25</b>		<b>480</b>	<b>145</b>	<b>625</b>	<b>312</b>

**APPENDIX – A2**

<b>Semester-II : Master of Cosmetic Technology</b>												
<b>S. No.</b>	<b>Subject Code</b>	<b>Theory/Practical</b>	<b>Teaching Scheme (Hrs/week)</b>			<b>Credits</b>	<b>Examination Scheme</b>					
			<b>Theory</b>	<b>Practical</b>	<b>Total</b>		<b>Duration (Hrs)</b>	<b>Max. Marks</b>		<b>Total Marks</b>	<b>Min. Passing Marks</b>	
								<b>External Marks</b>	<b>Internal/Sessional Marks</b>			
1	2MCT-T-1	Core-I-Formulation & Development – II (FDII)	4	--	4	4	3	80	20	100	50	
2	2MCT-T-2	Core-II-Advance Cosmetics Technology II (ACT II)	4	--	54	4	3	80	20	100	50	
3	2MCT-T-3	Core-III-Statistics and Qualitative Techniques (SQT)	4	--	4	4	3	80	20	100	50	
4	2MCT-T-4	Core-IV-Natural Products (NP)	4	--	4	4	3	80	20	100	50	
5	2MCT-P-1	Core I Practical Formulation & Development – II (FDII)	--	8	8	4	6	80	20	100	50	
6	2MCT-P-2	Core II Practical Advance Cosmetics Technology II (ACT II)	--	8	8	4	6	80	20	100	50	
7	2MCT-P-3	Core III Practical Statistics and Qualitative Techniques (SQT)	--	2	2	1	--	--	25	25	12	
<b>Total</b>			<b>16</b>	<b>18</b>	<b>34</b>	<b>25</b>		<b>480</b>	<b>145</b>	<b>625</b>	<b>312</b>	

**APPENDIX – A3**

<b>Semester-III : Master of Cosmetic Technology</b>										
<b>Subject Code</b>	<b>Theory/Practical</b>	<b>Teaching Scheme (Hrs/week)</b>			<b>Credits</b>	<b>Examination Scheme</b>				
		<b>Theory</b>	<b>Practical</b>	<b>Total</b>		<b>Duration (Hrs)</b>	<b>Max. Marks</b>		<b>Total Marks</b>	<b>Min. Passing Marks</b>
							<b>External Marks</b>	<b>Internal/Sessional Marks</b>		
3MCT-T-1	Core-I- Advance Cosmetics Technology III (ACT III)	4	--	4	4	3	80	20	100	50
3MCT-T-2	Core-II- Quality Assurance Technique II (QAT II)	4	--	4	4	3	80	20	100	50
3MCT-T-3	Elective I –Skin care Cosmetics (SSC) OR Elective – II Hair Care Cosmetics (HCC)	4	--	4	4	3	80	20	100	50
3MCT-T-4	Foundation * OR Research Designing and Planning (RDP)	4	--	4	4	3	80	20	100	50
3MCT-P-1	Core-I Practical- Advance Cosmetics Technology III (ACT III)	--	8	8	4	6	80	20	100	50
3MCT-P-2	Elective Practical-I –Skin care Cosmetics (SSC) OR Elective Practical – II Hair Care Cosmetics (HCC)	--	8	8	4	6	80	20	100	50
3MCT-P-3	Seminar	--	2	2	1	--	--	25	25	10
<b>Total</b>		<b>16</b>	<b>18</b>	<b>34</b>	<b>25</b>		<b>480</b>	<b>145</b>	<b>625</b>	<b>310</b>

Note: 1) Minimum 5 students will be allowed to opt particular elective, if less than 5 students opt particular elective it will be solely the discretion of the Institute / College to allow.

2) \* Refer Annexure 1 for selection of foundation course.

**APPENDIX – A4**

<b>Semester-IV : Master of Cosmetic Technology</b>												
<b>S. No.</b>	<b>Subject Code</b>	<b>Theory/Practical</b>	<b>Teaching Scheme (Hrs/week)</b>			<b>Credits</b>	<b>Examination Scheme</b>					
			<b>Theory</b>	<b>Practical</b>	<b>Total</b>		<b>Duration (Hrs)</b>	<b>Max. Marks</b>		<b>Total Marks</b>	<b>Min. Passing Marks</b>	
								<b>External Marks</b>	<b>Internal/sessional Marks</b>			
1	4MCT-T-1	Core-I- Cosmetics Microbiology (CM)	4	--	4	4	3	80	20	100	50	
2	4MCT-T-2	Core-II- Production and Marketing Management (PMM)	4	--	4	4	3	80	20	100	50	
3	4MCT-T-3	Elective I – Perfumes in Cosmetics (PC) OR Elective –II Colour Cosmetics (CC)	4	--	4	4	3	80	20	100	50	
4	4MCT-T-4	Foundation * OR Global Fashion Trends (GFT)	4	--	4	4	3	80	20	100	50	
5	4MCT-P-1	Core-I Practical- Cosmetics Microbiology (CM)	--	6	6	3	6	40	10	50	25	
6	4MCT-P-2	Elective Practical-I – Perfumes in Cosmetics (PC) OR Elective Practical –II Colour Cosmetics (CC)	--	6	6	3	6	40	10	50	25	
7	4MCT-P-3	Research Project	--	6	6	3	6	100	25	125	60	
<b>Total</b>			<b>16</b>	<b>18</b>	<b>32</b>	<b>25</b>		<b>500</b>	<b>125</b>	<b>625</b>	<b>310</b>	

Note: 1) Minimum 5 students will be allowed to opt particular elective, if less than 5 students opt particular elective it will be solely the discretion of the Institute / College to allow  
2) \* Refer Annexure 1 for selection of foundation course.



**Project Work Scheme**  
**Guidelines for the Students, Supervisors and Examiners**

Every student is required to carry out **Experimental / Field** based **Project Work** (semester IV) on a related research topic of the subject /course. It must be an original work and must indicate some degree of experimental work. On the basis of this work, student must submit the Project Report (typed and properly bound) in two copies at least one month prior to commencement of the final Practical/lab Examination of Semester IV. The project report shall comprise of Introduction, Material and Methods, Results, Discussion, Summary, Conclusions and References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head/Course-coordinator/Director of the Department/Centre or the Principal of the College.

The supervisors for the Experimental project work shall be from the following. A person selected by the duly constituted selection committee in the relevant subject and approved by the University, exclusively for P. G. Course.

**OR**

A person selected by the duly constituted selection committee of the University approved by the University and appointed as a full time regular teacher with Masters Degree at U. G. Level in the relevant subject and having at least 10 years teaching experience.

**OR**

A person selected by the duly constituted selection committee of the University approved by the University and appointed as a full time regular teacher with Ph. D. Degree at U. G. Level in the relevant subject and having at least 5 years teaching experience.

**OR**

A person from Industry or recognized laboratory with Masters Degree in relevant field with 10 years experience at the rank not below manager or with Ph. D. Degree in the relevant field with 5 years experience at the rank not below manager can work as co supervisor along with supervisor.

## Appendix-A5

### General Rules and Regulations

#### A) Pattern of Question Paper

1. The Syllabus of every subject is divided into four units
2. Question paper should contain at least one question per unit and one question covering all units.
3. All questions should have equal weightage.
4. Each paper will be of 3 hours duration.

#### B) Absorption scheme:

- 1) While switching over to choice based credit system semester pattern, the failure students of credit based semester pattern will be given FIVE chances, instead of three chances, to clear the examination.

#### C) Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA)

- 1) On clearing a paper, based on cumulative score (out of 100) in that paper, a student will be given grade point average (GPA) (Maximum of 10 and minimum of 5) for that paper on the following basis.

Score (out of 100)	Grade	Grade Point Average (out of 10)
90 to 100	O: Outstanding	10
80 to 89	A: Very Good	09
70 to 79	B: Good	08
60 to 69	C: Average	07
55 to 59	D: Satisfactory	06
50 to 54	E: Pass	05
Below 50	F: Fail	00 or fail

- 2) On clearing all the papers in a semester, a student will be allotted a **Semester Grade Point Average (SGPA)** for that particular semester. As the pattern given above does not have differential weights for papers, the SGPA of a student for a particular semester will be the average of the GPA's for all the papers.
- 3) A student will be allotted a **Cumulative Grade Point Average (CGPA)** after clearing all the four semesters. Again as there is no differential weight system for semesters, the CGPA of a student will be the average of the four SGPA's of that student.

CGPA	Equivalent class / division
9.00 to 10.00	First class (out standing)
8.00 to 8.99	First class (excellent)
7.00 to 7.99	First class with distinction
6 to 6.99	First class
5 to 5.99	Higher Second class
Below 5.00	Fail

The CGPA can be converted to the usual / conventional divisions in the following way.

- a. A student failed to score minimum 50% marks in each head of passing and in aggregate shall be given F grade.
  - b. Student with F grade in a course would be granted credit for that course but not the grade for that semester.
  - c. Grade points earned in each paper shall be calculated as – Grade points obtained (vide above table) x Credits for the paper.
  - d. The formula for GPA will be based on Average. The final GPA will not be printed unless a student passes courses equivalent to minimum 100 Credits.
- 4) While declaring the result, the existing relevant ordinances are applicable. For verification and revaluation existing rules will be applicable.
  - 5) The candidate may take all the examinations as per the provisions of ATKT simultaneously but his/her result of final semester shall not be declared unless he/she is declared successful at lower examinations.
  - 6) If an examinee failed to pass the post graduate programme within five successive years (for four semesters degree) from the date of his / her first admission to particular post graduate programme he/ she shall be declared as “Not Fit for the Course (NFC)” and he/ she will not be allowed to appear further for any previous examination of the course.
  - 7) The computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) of an examinee shall be given below:
    - a. The marks will be given in all examinations which will include the college assessment marks, and the total marks for each Theory/ Practical shall be converted into Grades as per above table. SGPA shall be calculated based on Grade Points corresponding to Grade as

given in above table and the credits allotted to respective Theory / Practical shown in the scheme for respective semester.

- b. SGPA shall be computed for every semester and CGPA shall be computed only in IV semester (for four semester degree). The CGPA of IV shall be calculated based on SGPA of all four semesters as per following computation:

$$\text{SGPA} = \frac{C_1 \times G_1 + C_2 \times G_2 + \dots + C_n \times G_n}{C_1 + C_2 + \dots + C_n}$$

Where C1 = Credit of individual Theory / Practical

G1 = Corresponding Grade Point obtained in the Respective Theory/ Practical

$$\text{CGPA} = \frac{(\text{SGPA}) I \times (\text{Cr}) I + (\text{SGPA}) II \times (\text{Cr}) II + (\text{SGPA}) III \times (\text{Cr}) III + (\text{SGPA}) IV \times (\text{Cr}) IV}{(\text{Cr}) I + (\text{Cr}) II + (\text{Cr}) III + (\text{Cr}) IV}$$

Where, (SGPA) I = SGPA of I Semester; (Cr) I = Total Credits for I Semester;

(SGPA) II = SGPA of II Semester; (Cr) II = Total Credits for II Semester;

(SGPA) III = SGPA of III Semester; (Cr) III = Total Credits for III Semester; (SGPA) IV = SGPA of IV Semester; (Cr) IV = Total Credits for IV Semester

## **MASTER OF COSMETIC TECHNOLOGY Semester I**

### **1MCT-T-1 Core –I FORMULATION AND DEVELOPMENT – I (FD I)**

Max. Marks – 100

Sessional - 20

- 1 Consideration of physical and chemical problems inherent in the formulation and development of cosmetic preparations.
  - a) Physical properties :- Physical forms, practical size, solubility, wetting of solids and flow, cohesiveness and organolaptic properties.
  - b) Chemical properties and stability of ingredients and additives.
- 2 Formulation Additives :  
Antioxidants and preservatives, perfumes, colouring and diluting agents, emulsifying and suspending agents, basic materials for creams/ointment bases, solvents and miscellaneous additives.
- 3 Formulation and Development of Cream / Lotion (bases), Hair remover, powder, lipstick, kajal, mascara, tooth powder, tooth paste, face pack, shampoo, colorants, aerosol, nail lacquer, Aftershave lotions, shaving cream, soap.
- 4 Packaging of cosmetics – Filling of solids, semisolids & liquids. Materials used for cosmetic packaging Rules & regulations and legal provisions for packaging & labeling.

#### **Recommended books :**

1. Cosmetic Science and Technology; M.S.Balsam & E. Sagarin; 2<sup>nd</sup> Ed; Vol. I, II, III
2. Harry's Cosmeticology; J.B. Wilkinson & R.J.Moore; 7<sup>th</sup> Ed; 1982
3. The theory & Practice of Industrial Pharmacy; Leon Lachman, Herberrrt Leiberman & Joseph L Kanig; 3<sup>rd</sup> Ed; 1990
4. Perfumes: History & chemistry; Dr D.D.Wasule; Vol 1; 1<sup>st</sup> Ed; 2009
5. New Cosmetic Science; T Mitsui
6. Indian Herbs by Chopra
7. Wealth of India, published by CSIR

## **MASTER OF COSMETIC TECHNOLOGY Semester I**

### **1MCT-T-2 Core -II QUALITY ASSURANCE TECHNIQUES I (QAT I)**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1 Quality assurance management -  
Introduction  
Quality & related terms - Basic concepts  
Quality - quality functions, quality control, quality policy, quality objectives, quality assurance, quality management.  
Inspection and Test  
Inspection & Inspection planning, Inspection manual, Product acceptance inspection, Inspector errors.  
Sampling - Sampling plans, procedures
- 2 Good manufacturing practices (GMP)-Schedule M, MI,MII, CGMP, Latest Amendments in GMP  
GLP - General provisions, organization and personnel facilities, equipment, testing facilities operation test and control articles, protocol for and conduct of a nonclinical laboratory study, records and reports. Laboratories safety planning and management, Biosafety, emergency procedures
- 3 Analysis of raw materials and Evaluation of finished products giving emphasis on – Physicochemical properties, chemical analysis, identification, instrumental analysis, biological toxicological testing, Raw Materials Waxes, fatty acids/ alcohols/ esters dispersing agents, colors, perfumes, preservatives antioxidants. Sweetening agents. Cosmetic or therapeutic agents, adsorbents etc.  
Products - Emulsions (liquid, cream), suspension (lotion), powders (talcum, baby, compact) Lipsticks, Mascara, kajal, hair care products (shampoo, colorants) tooth pastes, tooth powders, men's toiletries, antiperspirants deodorants, nail lacquers, aerosols etc.
- 4 Intellectual Property Right Act, its significance and importance with reference to cosmetics, ISO 9000 Systems.

**Recommended books:**

1. A.O.A.C. (Book published by Association of Organic and Analytical Chemistry).
2. W.A. Poucher : Perfumes, Cosmetics and Soap Volume I, II, and III – Chapman and Hall.
3. ISI booklets
4. Balsam et al : Cosmetics Science and Technology; Vol I, II and III. Wiley Interscience.
5. Standard methods of Chemical Analysis – Edited by Frant J. Welchar D. Van. Norstrand.
6. Calorimetric methods of Analysis by Z.D. Snell and C.T. – Snell - Van Norstrand Reinhold.
7. Toxicology of Drugs and Chemicals W.B. Deichman and H.W. Gerada, Academic Press.
8. Cosmetic Chemistry I; Dr.S. B. Kulkarni; Danait Publications.
9. Text Book of Toxicology – Dubols and Getting – Oxford.
10. How to practice G.M.P.; P.P. Sharma
11. Cosmetic formulation, Management and quality control by P.P. Sharma.
12. How to practice GLP; P.P. Sharma
13. Drug and Cosmetic Act. By GOI

**MASTER OF COSMETIC TECHNOLOGY Semester I**

**1MCT-T-3            Core -III RESEARCH METHODOLOGY (RM)**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1     Methods of sampling  
Concept of sampling, Methods of sampling, probability sampling, non-probability sampling, choice of the sampling method, characteristics of a good sample.
- 2     Research tools-I: questionnaire rating scale, attitude scale and test: Introduction, scales of Data measurement, characteristics of a good research tool, validity, reliability, usability, types of tools and their uses, questionnaire and schedules, rating scale, attitude scale, tests.
- 3     Research tools -II: Interview, observation and documents :Introduction, types of tools and their uses, interview, observation, documents
- 4     Data collection: Introduction, concept of data, methods of data collection, asking questions, observation of behavior, utilizations of existing records of data, ensuring the quality of data.
- 5     Tabulation and organization of data: Introduction, types of data: quantitative and qualitative, processing of quantitative data, data processing, coding of data, preparing a master chart, tabulations and organization of quantitative data, frequency distribution, cumulative frequency distribution, contingency tables, graphical presentation of quantitative data, representation of frequency distribution, graphs for nominal and ordinal data, graphs for relation between two variables, qualitative data, organization of qualitative data.

**Recommended Books:**

1. Edwards: Experimental Design in Psychological Research.
2. Garrett, Henry E. (1971): Statistics in Psychology and Education, David Haley & Co.
3. Kerlinger: Foundation of Educational Research.
4. SPSS / PC for the IBM PC / XT, SPSS Inc.
5. Bandarkar, P.L. and Wilkinson T.S. (2000): Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai.



6. Stranss, A. and Corbin, J. (1990): Basis of Qualitative Research, Grounded Theory Procedures and Techniques, Sage Publications, California. Unwanted effects of cosmetics and drugs used in dermatology by J.P. Nater. Groot, & Liem.

**MASTER OF COSMETIC TECHNOLOGY Semester I**

**1MCT-T-4 Core -IV ADVANCED COSMETIC TECHNOLOGY – I (ACT I)**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1 Interfacial Phenomenon:  
Liquid – Liquid interface: Insoluble monolayers, surface pressure, surface potential, surface rheology and their measurement, structure and state of monolayers, mixed monolayers, Macromolecular films, Biological membranes, Liquid-solid interface, detailed study of wetting, detergency and water repellency.
- 2 Theories of dispersion Techniques – Physical considerations, adsorption and interfacial energy, study of relevant equation, adsorption at solid surfaces, electrical phenomenon at interfaces, particle – particle interaction, influence of polymer adsorption on particle, Vehicle interaction, flocculation kinetics, controlled flocculation. Application of dispersion techniques in formulation of emulsion and suspension.
- 3 Concept of Solubilization  
Surface Active agents, Micelle formation, factors affecting micelle formation and physical methods of investigation of micellar solutions. Theory and mechanism of solubilization.
- 4 Solubilization and its applications:  
Some factors in the formulation of Cosmetics containing solubilized materials like choice of surface active agents, effect on the nature of the solubility, effect of cosolubilizing agents on the solubilizing action of surface active agents, effect of temperature on the solubilization, phase equilibria in systems containing surfactants, applications of solubilization, solubilization of phenolic disinfectants,

Idophors, vitamin preparations, hormones solutions, steroids, flavors and perfumes etc.

**Recommended books:**

- 1) "Advances in Pharmaceutical Sciences" Vol. I, II, III & IV, edited by H,S Bean, A, H, Beckett & J.E.Carless.
- 2) Martin A.N. "Physical Pharmacy ", All editions
- 3) Lachman et. Al "The Theory and Practical of Industrial Pharmacy", All editions
- 4) "Remington's, Pharmaceutical Science", 16<sup>th</sup> Ed
- 5) Badger W.L. & Banchemo; "Introduction of Chemical Engineering".
- 6) Chemical Engineering by Richardson & Curdson.

**MASTER OF COSMETIC TECHNOLOGY Semester I**

**1MCT-P-1 Core Practical -I FORMULATION AND DEVELOPMENT I [FD I]**

Max. Marks –	100
Paper -	80
Sessional -	20

1. Study of Physical and Chemical properties of ingredients used in Cosmetics
2. Development of following Cosmetic products and incorporation of additives like color, perfumes and study of effect of ingredients on the formulation of following products.
  - I. Emulsion – Skin cream/Lotion/Sunscreen/Skin lightening/Hair removing cream/any other
  - II. Suspension–Kajal/Mascara/Face pack/Foundation/Calamine cream /Lotion, any other
  - III. Powder- Talcum powder/Baby powder/Compact powders, any other
  - IV. Hair care- Shampoo/Colorant(Synthetic /Herbal), Hair serum and Conditioner
  - V. Oral care – Tooth paste and Tooth powder

- VI. Colored cosmetics – Nail lacquer, Lipsticks, Eye shadow, any other
- VII. Soaps
- VIII. Aerosol/Perfume
- IX. Men's toiletry - Shaving cream, Aftershave lotions

**MASTER OF COSMETIC TECHNOLOGY Semester I**

**1MCT-P-2 Core Practical -II QUALITY ASSURANCE TECHNIQUES I**

**[QAT I]**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1 Carry out identification, physicochemical properties, chemical analysis, instrumental analysis, biological – toxicological testing for Raw Materials as per official standards:-  
 Waxes, fatty acids/ Alcohols/ esters, dispersing agents, colors, perfumes, preservatives, antioxidants, sweetening agents, cosmetic or therapeutic agents, adsorbents etc.  
 Finished Products :-  
 Emulsion, suspensions, powders (Talcum, baby and compacts). Lipsticks, mascara, Kajal, Hair care products (Shampoo, colorants), toothpaste, toothpowder's, antiperspirant and deodorants, nail lacquers, aerosols, men's toiletries (Shaving cream, after shave lotions, eue-de – colongne), soaps, perfumes,.
- 2 Evaluation (determination and detection) of the following in the finished product –  
 Color  
 Perfumes  
 Flavours

**MASTER OF COSMETIC TECHNOLOGY Semester I**

**1MCT-P-3 Core Practical -III RESEARCH METHODOLOGY**

Max. Marks - 25

Sessional - 25

1. Literature search through chemical abstract, internet, books, journals.
2. Research data collection & presentation.
3. The candidate shall deliver seminar during the session, on selected topics of current research interest as reported in the research journals in the field of cosmetology.
4. The students will be delivering at least two seminars during the session. The seminars based on research reviews will be evaluated by the panel of experts consisting of minimum three teachers including Head of the Department.

## **MASTER OF COSMETIC TECHNOLOGY Semester II**

### **2MCT-T-1      FORMULATION & DEVELOPMENT- II (FD-II)**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1 Formulation and Development of Hair gels, Creams, Serums, Hair Conditioners, Hair packs, Hair oil, Eau-de – cologne, Anti perspirant and Deodorant, Shaving cream, Perfumes, Colours (formulation aspects)
- 2 Eye care – Eye shadow, Eye liners, Under eye gels, Creams and serums, Under eye concealer and High lighters, Eye shimmer, Puffy eye control, Eyebrow pencils, Dark circle control and any other .
- 3 Pilot Plant scale up Techniques: General considerations. Review of formula, Raw materials, equipments etc. Process evaluation, Preparation of Master Manufacturing process.
- 4 Establishing pilot plant, studies, scale-up the manufacture of product to intermediate and large scale production.  
Requirements & Methods for Maintenance of sterile area.

#### **Recommended books :**

1. Cosmetic Science and Technology; M.S.Balsam & E. Sagarin; 2<sup>nd</sup> Ed; Vol. I, II, III
2. Harry's Cosmeticology; J.B. Wilkinson & R.J.Moore; 7<sup>th</sup> Ed; 1982
3. The theory & Practice of Industrial Pharmacy; Leon Lachman, Herbertt Leiberman & Joseph L Kanig; 3<sup>rd</sup> Ed; 1990
4. Perfume:History & chemistry By Dr D.D.Wasule
5. New Cosmetic Science; T Mitsui
6. Indian Herbs by Chopra
7. Wealth of India, published by CSIR

## **MASTER OF COSMETIC TECHNOLOGY Semester II**

### **2MCT-T-2 ADVANCED COSMETIC TECHNOLOGY – II (ACT II)**

Max. Marks –	100
Paper -	80
Sessional -	20

1 Emulsions:

Electrical theories of stabilization of emulsions, assessment and prediction of emulsion shelf life, equations, involved in emulsion stability stress conditions and physical parameters employed to evaluate emulsion stability, prevention of interaction between preservatives and emulsion ingredients like surface active agents hydrophilic polymers, suspended particles packaging materials etc. Predication of preservative's efficiency.

Production, equipments, Industrial processing and large-scale manufacture.

2 Suspensions:

Theory, Production, equipments, industrial processing and large-scale manufacturing.

3 Rheology :

Theoretical considerations, Thixotropy, spurs and bulges in the hysteresis loop, continuous shear rheometry of semisolids, viscoelasticity, the creep test study including principle of operation and applications of Coneplate, Stormer, Mac Michael, Brook-field viscometers. Chemical and Physical factors effecting rheological properties, Rheology and product design, Rheology and cosmaceutical processing, Rheology and biological applications.

4 Micromeritics :

Adsorption, air permeability techniques and determination of surface area and size of particles. Classification and evaluation of some basic properties of powders, flow properties of various powder systems.

#### **Recommended books:**

1. "Advances in Pharmaceutical Sciences" Vol. I, II, III & IV, edited by Bran, Bechertl & Carless.
2. Martin A.N. "Physical Pharmacy".

3. Lachman et. Al “The Theory and Practical of Industrial Pharmacy”.
4. “Remington’s, Pharmaceutical Practices”.
5. Badger W.L. & Banchemo “Introduction of Chemical Engineering”.
6. Chemical Engineering by Richardson & Crudson.

**MASTER OF COSMETIC TECHNOLOGY Semester II**

**2MCT-T-3 STATISTIC AND QUALITATIVE TECHNIQUES (SQT)**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1 Conceptual understanding of statistical measures. Classification and tabulation of data. Measurement of central tendency, measures of variation.
- 2 Frequency distribution, histogram, frequency, polygons, Oliver.
  - a. Binomial distribution
  - b. Normal distribution – use of normal probability tables
  - c. Parametric and non-parametric tests.
- 3 Testing of hypothesis. Type I and Type II errors. Levels of significance
  - a. Chi-square test. Goodness of fit. Independence of attributes 2x2 and r x c contingency tables.
  - b. Application of student ‘t’ test for small samples. Difference in proportion for means and difference in means.  
Correlation, coefficient of correlation, rank correlation.
- 4 Regression and prediction.  
Analysis of variance – one way and two-way classification.

**Recommended Books:**

- 1 Edwards: Experimental Design in Psychological Research.
- 2 Garrett, Henry E. (1971): Statistics in Psychology and Education, David Haley & Co.
- 3 Kerlinger: Foundation of Educational Research.
- 4 SPSS / PC for the IBM PC / XT, SPSS Inc.
- 5 Bandarkar, P.L. and Wilkinson T.S. (2000): Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai.

- 6 Stranss, A. and Corbin, J. (1990): Basis of Qualitative Research, Grounded Theory Procedures and Techniques, Sage Publications, California. Unwanted effects of cosmetics and drugs used in dermatology by J.P. Nater. Groot, & Liem.

**MASTER OF COSMETIC TECHNOLOGY Semester II**

**2MCT-T-4**

**Natural Products (NP)**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1 Collection and identification of Raw Herbal material, methods for identification.
- 2 Extraction of compounds from herbs- Compounds, structures and properties. Methods of extraction of compounds- Solvents, distillation, Supercritical fluid extraction.
- 3 Standardization and quality control of herbal extracts & products. Standardization QA, AC & GMP, SOP, Qualitative & quantitative analysis of herbal extracts and products.  
New technologies and other bioassays for screening and mechanism study.  
Key to functional mechanism study of Herbal medicines.
- 4 Functional evaluation & herbal actives- significance of research, characteristics of pharmacological research, design of pharmacological study on herbal medicines.

**Recommended books:**

- 1) Traditional Herbal Medicine Research Methods edited by Willow L. H. Liu.
- 2) Pharmacognosy by C. K. Kokate, A.P. Purohit, S. B. Gokhale.
- 3) Pharmacognosy by Trease and Wallis
- 4) Bentley and Driver's Text book of Pharmaceutical Chemistry.
- 5) Remingtons 'The Science and Practice of Pharmacy' 21<sup>st</sup> ed., vol I,II



## **MASTER OF COSMETIC TECHNOLOGY Semester II**

### **2MCT-P-1 FORMULATION AND DEVELOPMENT II [F D II]**

Max. Marks –	100
Paper -	80
Sessional -	20

- 1 Extraction & Isolation of active principles from important cosmeceutical/therapeutic herbs.
- 2 Incorporation of active herbal principles in various cosmetic products. ( at least two products from each category – solid, semi solid, and liquid)

## **MASTER OF COSMETIC TECHNOLOGY Semester - II**

### **2MCT-P-2 ADVANCED COSMETIC TECHNOLOGY – II (ACT II)**

Max. Marks –	100
Paper -	80
Sessional -	20

1. Evaluation of stability of Emulsions through different methods.
  - a. Accelerated stability study.
  - b. Particle size analysis
  - c. Other Parameters
2. Evaluation of stability of suspensions through different methods.
  - a. Accelerated stability study
  - b. Particle size analysis
  - c. Other parameters.
3. To measure Zeta potential of emulsion and to co-relate with stability.
4. To measure Zeta potential of suspensions and to co-relate with stability.
5. To determine the cmc of surfactants by stalagmometer (Anionic, Cationic, Nonionic, Ampholytic)
6. To determine the cmc of surfactants by capillary rise method.
7. To study the effect of salts on cmc of surfactant.
8. Determination of amount of surfactants with respect to phase- volume ratio.
9. To demonstrate the effect of air-entrapment on rheology of creams.

10. Interaction between the preservatives and antioxidants, emulsifying agents.
11. Interaction of above mentioned additives on the different packaging material.
12. To study the effect of pH on partition co-efficient of weak acids.
13. To study the effect of solvents on partition co-efficient of weak acids.
14. To study the flow properties of powders.
  - a. Effect of particle size (b)Moisture content
  - c. Other additives like glidants & lubricants

} On angle of Repose

**MASTER OF COSMETIC TECHNOLOGY Semester II**

**2MCT-P-3 STATISTIC AND QUALITATIVE TECHNIQUES (SQT)**

Max. Marks – 25

Sessional - 25

- 1 Study of sampling methods
- 2 Collection of data for minimum two cases/ study/ survey.
- 3 Statistical analysis of data

## **MASTER OF COSMETIC TECHNOLOGY Semester III**

### **3MCT-T-1    ADVANCED COSMETIC TECHNOLOGY-III (ACT III)**

Max. Marks-100

Paper-            80

Sessional    -    20

1. Delivery systems – Introduction, Path ways of Delivery, Types of Delivery Systems and Application.
2. Microencapsulation: Liposome, Niosome, Transferosome- techniques of manufacturing, Safety aspects, Application, Formulation in Cosmetics and Regulatory aspects.
3. Nano technology – Nanoparticles manufacturing techniques, Safety aspects, Application, Formulation in cosmetics and Regulatory aspects.
4. Latest trend in delivery system- Microsponges, Microspheres and others

#### **Recommended Books-**

1. Cosmetic Nanotechnology Polymers And Colloids in Personal Care; Sarah E. Morgan; Published by A chemical
2. Delivery System Handbook for Personal Care And Cosmetic Product Technology, Applications and Formulations, Edited by Meyer R. Rosen, William Andrew Publishing, NY, 2005.
3. Textbook of Industrial Pharmacy, Drug Delivery Systems and Cosmetic and Herbal Drug Technology, Edited by Shobha Rani R Hiremath, Orient Longman Pvt. Ltd., 2008

## **MASTER OF COSMETIC TECHNOLOGY Semester III**

### **3MCT-T-2    QUALITY ASSURANCE TECHNIQUES II (QAT II)**

Max. Marks –        100

Paper        -        80

Sessional    -        20

1.    Compliance of Drug & Cosmetic Act 1940 with reference to provisions for packaging and labelling (Rule 150 A, schedule S), permitted colors, flavors etc.

2. Quality Assessment of packaging material, containers and closures as per BIS/IP, Recent trends and alternatives.
3. Skin testing – Study of Structure of Skin, Functions, Types, Color/ Texture/surface studies/ Moisture determination studies, Patch testing as per BIS, Recent trends and alternatives  
Hair Testing – Study of Structure of Hair, Functions, Types, Color/ Texture/surface studies, Conditioning and Tensile strength determinations, Recent trends and alternatives.
4. Performance evaluation of cosmetic (skin care and hair care) products Using sophisticated instruments like Cutometer, Corneometer, Mexameter, TEWAmeter, Conductivity meter, Skin pH meter, Elastometer, Sebumeter, Visioscan, Tensile Tester, Trichometer, Reflectance, Combability, Static Charge.

**Recommended books:**

1. A.O.A.C. (Book published by Association of organic and Analytical Chemistry).
2. W.A. Poucher : Perfumes, Cosmetics and Soap Volume I, II, and III – Chapman and Hall.
3. Balsam et al: Cosmetics Science and Technology Mim I, II and III. Wiley Interscience.
4. Standard methods of Chemical Analysis – Edited by Frant J. Welchar D. Van. Norstrand.
5. Calorimetric methods of Analysis by Z.D. Snell and C.T. – Snell - Van Norstrand Reinhold.
6. Toxicology of Drugs and Chemicals W.B. Deichman and H.W. Gerada, Academic Press.
7. Text Book of Toxicology – Dubols and Getting – Oxford.
8. Practical Cosmetic Microbiology by Kulkarni, Meghare Denett publications.
9. How to practice G.M.P.S. by P.P. Sharma
10. Cosmetic formulation, Management and quality control by P.P. Sharma.

11. How to practice GLP by P.P. Sharma
12. Drug and Cosmetic Act. By GOI

**MASTER OF COSMETIC TECHNOLOGY Semester III**

**3MCT-T-3      ELECTIVE I— SKIN CARE COSMETICS (SCC)**

Max.Marks –	100
Paper-	80
Sessional -	20

- 1      Phytochemical Screening of Natural products: General method used for isolation & purifications of natural products. Study of chromatographic techniques applied to natural products and recent trends in the field.
  
- 2      Study of application and mechanism of action of following categories of synthetic actives like Cleansing, Emollient & Skin Pigmentation, Antipimples & Anticellulite, Fresheners, & Perfumes, Astringents & Antibacterials, Emulgents.
  
- 3      Study of Natural ingredients acting on Skin in the following category :
  - Scrubbing: Apricot, Walnut, Pistachio
  - Cleansing : Olive oil, Sesame oil, Aloe vera
  - Emollient : Lanolin, beeswax, Cocoa/Shea butter
  - Skin Pigmentation: Licorice, Jesthamadh, Saffron
  - Antipimples : Black pepper, Daru Haldi, Nutmeg
  - Anticellulite : Caffeine (Tea/Coffee) Vinca, Cinchona, Withani
  - Fresheners, & perfumes: Chandan, Khus, Cinnamon
  - Astringents: Tannic acid, Ashoka, Hirda
  - Antibacterial : Curry leaves, Capsicum, Tea tree oil
  - Emulgents : Accacia, Agar, Tragacanth
  
- 4      Standardization of Actives:
 

Importance of standardization (as per WHO guidelines), assessment of synthetic actives and Herbal extracts in formulations, methods employed for standardization of herbs with special reforms to industrial methods HPLC, HPTLC ; Flash chromatography, GLC etc.

### **Recommended books**

- 1) Pharmacognosy Vol I & Vol II by Mohammed Ali
- 2) Materia medica
- 3) Herbs useful in dermatological Therapy, Behl P.N.
- 4) Dian Dinein Buchmans Herbal medicure , Gramercy, publication, company illustrated by Leaven Jarrett
- 5) Wealth of India
- 6) The Ayurvedic Encyclopedia.
- 7) Herbs, Spices, and Medicinal plants Vol I, II, III & IV by Kyle , E. Craker & James E. Simon.

### **ELECTIVE-II –HAIR CARE COSMETICS (HCC)**

Max.Marks –	100
Paper-	80
Sessional -	20

- 1 Nomenclature, characteristics & classification, chemical constitution, method of isolation & estimation of herbs used for hair care and recent trends in the field.
- 1 Study of Natural Ingredients acting on hair in the following categories -  
Hair Conditioning : Coconut Oil, Olive Oil, Egg White  
Hair growth promoter : Brahmi, Fenugreek, Jatamansi  
Hair Tonics: Calendula, Hibiscus, Arnica  
Antidandruff : Tulsi, Neem, Wheat Gram Oil.  
Hair Colorants : Amala, Heena, Bhringaraja  
Hair cleansing : Ritha, Shikakai, Amla
- 3 Natural products as hair care : Apple, Apricot, Banana, Wheat, Barli, Melon, Carrot, Cucumber, Spinach, Berries, Beet root, Peach, Sweet Potato, Pudina, Tomato, Milk, Yogurt, Tea, Honey.
- 4 Extraction & isolation of active principles of herbs and synthetic actives, & their incorporation in various cosmetics formulations like creams, lotions, powders & other cosmetics, formulations.

## **Recommended books**

- 1) Indian Materia Medica by Nadkarni T.B. of Pharmacognosy by Trease & Evans
- 2) Wealth of India – C.S.P. Publications.
- 3) Hand Book of Herbal Products Vol I & II by NIIR Board of Technologist.
- 4) Pharmacopoeia Standards of Herbs by Dr. C.R. Karnik.
- 5) Cosmetics Analysis Selective Methods with Techniques by P. Bare.
- 6) Pharmacognosy Vol I & II by Mohammed Ali CBS Publications, New Delhi.

### **MASTER OF COSMETIC TECHNOLOGY Semester III**

#### **3MCT-T-4 FOUNDATION / RESEARCH DESIGNING AND PLANNING (RDP)**

Max.Marks – 100  
Paper- 80  
Sessional - 20

- 1 Data Management, Analysis and presentation –Introduction, Introduction of SPSS and Features, Menu commends, basic steps in data analysis,  
Data file management function, Preliminary analysis – six characteristics of a data set, data transformation and presentation.  
Parametric test and non parametric test  
Statistical analysis system (SAS)
- 2 Understanding the Technical terms and project overview Preparing the Research Proposal
- 3 The Project/Dissertation Report: Basic Components
- 4 Preparing the manuscript and assessment.

## **Recommended books**

1. Edwards: Experimental Design in Psychological Research.
2. Garrett, Henry E. (1971): Statistics in Psychology and Education, David Haley & Co.
3. Kerlinger: Foundation of Educational Research.
4. SPSS / PC for the IBM PC / XT, SPSS Inc.

5. Bandarkar, P.L. and Wilkinson T.S. (2000): Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai.
6. Curriculum guidelines from IGNOU

**MASTER OF COSMETIC TECHNOLOGY Semester III**

**3MCT-P-1                      ADVANCED COSMETIC TECHNOLOGY-III (ACT III)**

Max. Marks – 100

Main--                      80

Sessional--              20

- 1      Preparation of cosmetic products based on following (minimum two products of each category)  
Study of different techniques for preparation of Microencapsulation - Liposomes, Nanoparticles, Neosomes by Injection, Pan coating, any other techniques (as reported in research papers, reviews, patents)

**MASTER OF COSMETIC TECHNOLOGY Semester III**

**3MCT-P-2                      ELECTIVE I—SKIN CARE COSMETICS (SCC)**

Max. Marks – 100

Main--                      80

Sessional--              20

- 1      Study of Morphological & Microscopic characters of Herbs used in Skincare
- 2      Photochemical constituents identification & quality control & standardization.
- 3      Application of various methods for extraction, solvent systems & isolation of active constituents.
- 4      Study of Various oils used in Aromatherapy with special reference to its applications.
- 5      Use of latest active synthetic derivatives in skin care products.



## **ELECTIVE-II – HAIR CARE COSMETICS (HCC)**

Max. Marks – 100  
Paper - 80  
Sessional - 20

1. Study of Morphological and Microscopic characters of various herbs used in hair care.
2. Study of Various Phytochemical Constituents and their identification (Testing)
3. Study of various Extraction methods & Isolation of active constituents from various herbs.
4. Study of various Extraction methods for active constituents from fruits.
5. Use of latest active synthetic derivatives in hair care products.

## **MASTER OF COSMETIC TECHNOLOGY Semester III**

**3MCT-P-3**

**Seminar**

Max. Marks – 25

Seminar based on current topics/ Historical Development / marketing aspects of cosmetics.

## **MASTER OF COSMETIC TECHNOLOGY Semester IV**

**4MCT-T-1**

### **COSMETICS MICROBIOLOGY (CM)**

Max. Marks – 100  
Paper - 80  
Sessional - 20

- 1 Microorganisms in raw materials, Risk assessment  
Microorganisms in manufacturing environment, current GMP, concept of HACCP,
- 2 Microbial contamination in cosmetic products.  
Microbial considerations in product formulation.  
Microbiological evaluation: Various methods for microbial assay of raw materials and finished Products. Preservative efficacy tests, factors affecting preservative efficacy, modulation of preservative efficacy by G<sup>+</sup> and G<sup>-</sup> organisms.  
Total microbial count, Isolation and identification of microorganisms specified in BIS guidelines from cosmetic products and raw materials.
- 3 sanitary practices in cosmetic manufacturing  
Microbial environment of manufacturing plant  
Hazard Analysis and critical control point (HACCP) protocols in cosmetic Microbiology.
- 4 Validation of Microbial testing methods
- 5 I- Global regulations of cosmetics preservatives  
II- Common cosmetic preservatives (monograms)  
Benzalkonium chloride, Benzoic Acid, Ethanol, Parabens, salicylic acid, zinc pyrithione.

#### **Recommended books**

- 1) Cosmetic Microbiology – Philip A Geis
- 2) Text book of Microbiology – Peltzer and Reid
- 3) Practical Cosmetic Microbiology – Meghre, Kulkarni

## **MASTER OF COSMETIC TECHNOLOGY Semester IV**

### **4MCT-T-2            PRODUCTION AND MARKETING MANAGEMENT (PMM)**

Max. Marks – 100

Paper        -    80

Sessional    - 20

- 1    Production Management:        Objectives    &    Policies,    Types    of  
production, Plant Location, decision Plant Layout, Types of Layouts.
- 2    Production planning and control, Industrial quality control, statistical  
quality control methods, TQM m ISO systems Job evaluation.
- 3    Materials Management, Scientific Purchasing, Inventory control, EOG  
model, inventory classification, ABC analysis, cost elements inventory  
Selection of vendors and vendor rating.
- 4    Maintenance Management, Material handling systems, sanitation and  
plant utilities, stores management.
- 5    Marketing : Meaning, Philosophies of marketing functions scope and  
evolution. Different demand states and formal marketing tasks,  
Marketing environment,
- 6    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.
- 7    Promotion – Different elements of promotion, personal selling,  
advertising, sales promotion and public relations. Supply chain  
management, customer relationship management.
- 8    International Marketing and E-commerce activities.    Packaging,  
Importance of packaging in marketing cosmetics, latest trends.  
Branding.  
Market Segmentation - Different methods of segmenting market.

#### **Recommended books:**

1.    Barat Nikhil “Production Management and Control.
2.    Moore F.G. “Manufacturing Management”
3.    Ammer D.S. “Manufacturing Management and Control”
4.    Cundiff E.Q. and Still R.R. “Basic Marketing”

5. Griffin M.C. "Drug and Cosmetic Packaging"
6. Journals:
  - i. Manufacturing Chemist and Aerosol News.
  - ii. Drug and Cosmetic Industry.
  - iii. Journal of Association of Cosmetic Chemists.
7. Marketing Management by Dr. Philip Kotler – PHI
8. Marketing Management by Stanton
9. Marketing Management by Rajan Saksena , TMH
10. Production Management by Chunnawala, H.Pals.
11. Marketing Management by Puffa
12. Marketing Management by by M. Telsang.

### **MASTER OF COSMETIC TECHNOLOGY SEMESTER IV**

#### **4MCT-T-3 ELECTIVE I - PERFUMES IN COSMETICS (PC)**

Max. Marks –	100
Paper –	80
Sessional-	20

- 1 Perfume matching and creation.
- 2 Application of Perfumes in personal care products-  
Antiperspirants and Deodorants ,Alcoholic preparation ( After shave lotion, eua de cologne), Cream (Hand cream, Sunscreen), Personal Fragrances, Masculine fragrance, Bath products (Foam bath, Bath salts, Bath oil, Toilet soaps, Shampoos), Powders -( Talcum powder), Lotions (Suntan lotion), Baby products.
- 3 Natural perfumes – Volatile oil, Essential oil, their sources extraction techniques, incorporation and application.
- 4 Evaluation of perfumes –  
Design of evaluation, Statistic and judgment

#### **Recommended books**

- 1)Perfumery : The Psychology and Biology of Fragrance – Toller and Dodd
- 2)An introduction to Perfumery – 2<sup>nd</sup> ed. Tony Curtis and D.G. Williams
- 3) Perfumes Cosmetics & Soaps –W. A . Poucher
- 4) The Formulation & preparation of Cosmetics, Fragrance and Flavors

## **ELECTIVE II – COLOR COSMETICS (CC)**

Max. Marks – 100  
Paper - 80  
Sessional - 20

- 1 Classification of Colors- synthetic and natural permitted color as per schedule of D & C act and IS4707, selection and preparation of color solutions.
- 2 Appropriate use of Natural colours / Pigments / Dyes in Formulation and development of colored Products, Powders and Compacts, Lipsticks, Eye shadow, Rouge, Mascara, Nail lacquers, Shampoo, Hair oil, Hair gel, Hair colorants, After shave lotions, Toothpaste, Mouthwash, Soaps.
- 3 Safety and Toxicity of colors
- 4 Stability study and Evaluation of Color cosmetic products.

### **Recommended books**

- 1.The Chemistry and Manufacture of Cosmetics by-Mitchell Schlossman
2. Cosmetic Science and Technology by –M Balsam and E. Sagarin.

## **MASTER OF COSMETIC TECHNOLOGY SEMESTER IV**

### **4MCT-T-4 FOUNDATION/ GLOBAL FASHION TRENDS (GFT)**

Max. Marks – 100  
Paper - 80  
Sessional - 20

- 1 Introduction  
  
Study of fashion trends complementing use of cosmetics, perfumes, colors and allied high end products.  
  
Fashion Terminology, classification of fashion Style, design, taste, classics, trend, fad, ford, season types of fashion shows.  
  
The knowledge of the psychological, sociological, historical and cultural aspects of clothing in the global community.
- 2 Fashion cycle and fashion flow chart  
  
Tracking of global fashion trends keeping in mind technological

changes in the production of clothing.

Fashion producers – The couturier, Haute Couture, Prada-Porter, fashion direction, fashion editors, line, knock-offs, Avante grade, bridge.

- 3 Understanding fashion trends – colour, silhouette, theme, fabric, accessories, detail surface ornamentation.  
Significance of fashion looks in combination with cosmetics and styling – punk, gothic, artdeco, bohemian, hippie grunge.  
Awareness about the fashion trends in clothing aspects.
- 4 Impact of film, theatre, TV and print media on designs of various Clothing.  
Globalization of the fashion capitals- London, Milan, Paris, New York, Tokyo.  
Study of fashion boards- design, inspiration, mood, colour and client.  
Review on the line development of international designer.

### **Recommended books**

- 1 Fashion & color by Mary Garthe, Rockport Publishers
- 2 Encyclopedia of fashion detail by Patric John, Ireland Batsford
- 3 Fashion from concept to consumer, Gini Stephens Frings, Prentice Hall
- 4 Inside the fashion business, Jeannette A. Jarrow
- 5 Fashion buying, Helen Gowork
- 6 Fashion design and product development, Harold Carr, Backwell

## **MASTER OF COSMETIC TECHNOLOGY SEMESTER IV**

**4MCT-P-1**

**COSMETICS MICROBIOLOGY (CM)**

Max. Marks – 50  
Paper - 40  
Sessional - 10

- 1 Microbiological evaluation: Various methods for microbial assay of raw materials and finished Products. Preservative efficacy tests, factors affecting preservative efficacy, modulation of preservative efficacy by G<sup>+</sup> and G<sup>-</sup> organisms.

- 2 Total microbial count, Isolation and identification of microorganisms specified in BIS guidelines from cosmetic products and raw materials.

**MASTER OF COSMETIC TECHNOLOGY SEMESTER IV**

**4MCT-P-2 ELECTIVE I - PERFUMES IN COSMETICS (PC)**

Max. Marks – 50  
Paper - 40  
Sessional - 10

1. Matching and Creation of perfume
2. Preparation of following products using appropriate perfumes.  
Alcoholic preparation (After shave lotion, eua de cologne), Cream, Personal Fragrances, Masculine fragrance, Bath products (Foam bath/ Bath salts/Bath oil/Toilet soaps/ Shampoos), Powders, Lotions, Baby products.

**ELECTIVE II – COLOR COSMETICS (CC)**

Max. Marks – 50  
Paper - 40  
Sessional - 10

- 1 Preparation of color solutions.
- 2 Extraction from various sources and incorporation of natural colour and pigments in cosmetics products (creams, liquids, oils, Powders)
- 3 Evaluation of above colors as ingredient and products
- 4 Toxicity testing of above products.

**MASTER OF COSMETIC TECHNOLOGY SEMESTER IV**

**4MCT-P-3 RESEARCH PROJECT**

Max. Marks – 125  
Research Project -100  
Sessional-- 25

Internal Assessment marks should be allotted on the basis of at least three seminar/reviews during Project work.