

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY
NAGPUR
FACULTY OF HOME SCIENCE
DIRECTION NO. 30 OF 2016
DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF
BACHELOR OF COSMETIC TECHNOLOGY
(SEMESTER PATTERN)

(Directions issued under section 14(8) of the Maharashtra University Act 1994 relating to award of Bachelor degree in Cosmetic Technology in the Faculty of Home science)

Whereas the Maharashtra Universities act No. XXXV of 1994 has come into force with effect from 22nd 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 in the Faculty of Home Science at its meeting held on 08/03/2016, has recommended for starting of semester pattern and prepared the syllabus and scheme of examination for Bachelor of Cosmetic Technology, commensurate with the governing guidelines.

AND

Whereas the Co-ordinator, Faculty of Home Science concurred with the recommendations of the Task Force in Cosmetic Technology in the Faculty of Home science vide his observations dated

AND

Whereas, the new draft direction and scheme of examination as per semester pattern is to be implemented from the academic session 2016-2017 for Bachelor of Cosmetic Technology which is to be regulated by this direction and as such there is no existence and framing of an ordinance for the above examination,

AND

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

AND

Whereas, the framing of an ordinance as required under provision of Act is a time consuming process, now therefore, I, Dr. Siddharthavinayaka P. Kane, the Vice Chancellor of 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 governing the Examination leading to the Degree of Bachelor of Cosmetic Technology (Semester Pattern), in the Faculty of Home Science, RTM Nagpur University, Nagpur".
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.

The duration of the Bachelor of Cosmetic Technology course shall be of Four academic years consisting of eight semesters with University examinations at the end of each semester namely:

- a. Bachelor of Cosmetic Technology Semester I Exam.
 - b. Bachelor of Cosmetic Technology Semester II Exam.
 - c. Bachelor of Cosmetic Technology Semester III Exam.
 - d. Bachelor of Cosmetic Technology Semester IV Exam.
 - e. Bachelor of Cosmetic Technology Semester V Exam.
 - f. Bachelor of Cosmetic Technology Semester VI Exam.
 - g. Bachelor of Cosmetic Technology Semester VII Exam.
 - h. Bachelor of Cosmetic Technology Semester VIII Exam.
3. The Examination specified in proceeding section shall be held twice a year at such places on such dates as may be decided by the University. The main examination of semester I,III,V and VII shall be held in winter whereas the examination for semester II,IV,VI and VIII shall be held in summer. The supplementary examination of semester I,III,V and VII will be held in summer whereas supplementary examination for semester II,IV,VI,VIII will be held in winter. There shall be no practical examination during semester I,III,V and VII. Practical examination will be held during semester II,IV,VI and VIII only comprising the curriculum of both the semesters of that particular year.
 4. Subject to the compliance with provisions of this direction and of other ordinances in force from time to time, a candidate for admission to the examination shall:
 - a) In the case of Bachelor of Cosmetic Technology Part I has passed XII standard examination of Maharashtra State Board of Secondary and Higher Secondary Education or an examination recognized as equivalent there to with Physics, Chemistry, Biology/ Mathematics and English as subjects and with not less than 45 % of Marks for open category and 40 % of Marks for reserved category in the subjects Physics, Chemistry and Biology/ mathematics taken together at one sitting.
 - b) In the case of Bachelor of Cosmetic Technology Part II have passed the Bachelor of Cosmetic Technology Part I (Semester I and II) Examination of the University or an examination recognized as equivalent thereto.
 - c) In the case of Bachelor of Cosmetic Technology Part III have passed the Bachelor of Cosmetic Technology Part II (Semester III and IV) examination of the University or an examination recognized as equivalent thereto.
 - d) In the case of Bachelor of Cosmetic Technology Part VI have passed the Bachelor of Cosmetic Technology Part III (Semester V and VI) examination of the University or an examination recognized as equivalent thereto.
 5. Without prejudice to the other provisions of the Ordinance No. 6 relating to the examination in general, provisions of paragraph 5,7,8,10 and 32 of the said ordinance of ATKT as well as reassessment / provisional admission as issued from time to time.

6. The ATKT rules for admission for the Course Bachelor of Cosmetic Technology 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 together of R.T.M. Nagpur University |
|-----------------------|---|--|
| Semester I | As provided in the para 4 of the direction | ----- |
| Semester II | ----- | ----- |
| Semester III | ----- | Semester I & II |
| Semester IV | ----- | Semester I, II & III |
| Semester V | Semester I & II | Semester III & IV |
| Semester VI | ----- | Semester III, IV & V |
| Semester VII | Semester III & IV | Semester V & VI |
| Semester VIII | ----- | Semester V, VI & VII |

7. The fees for the examinations shall be as prescribed by the University, from time to time and whenever, any change is made in the fees prescribed for any particular examination that shall be notified through a notification for the information of all concerned.
8. Every candidate for Bachelor of Cosmetic Technology Examination shall be examined in the subjects as set out in the Appendices to this Directions,
 - i. The scope of the subjects shall be as indicated in the respective syllabus in force from time to time.
 - ii. Medium of examination shall be English.
9. An applicant for admission to an Examination shall satisfy the Head of the Department / Principal as regards the Sessional examinations/Internal assessment conducted during the academic year regarding her / his suitability to take the University examination.
10. In order to pass in the Examination an examinee shall obtain in each subject not less than the minimum marks as indicated in the Appendices.
11. The Head of the Department / Principal shall maintain the complete record of the marks obtained by the candidate in the sessional examinations/internal assessment that shall be submitted, before the commencement of the University examination, to the Controller of Examination, in a sealed cover.
12. There shall be no classification of successful examinees at I,II,III,IV,V,VI,VII semesters of Bachelor of Cosmetic Technology.
13. Division of examinees successful at the VIII th semester of Bachelor of Cosmetic Technology shall be determined on the basis of the aggregate marks obtained at all the semesters of Bachelor of Cosmetic Technology.
14. Those obtaining 60% or more marks in aggregate shall be placed in First Division and all other successful examinees in the Second Division respectively.
15. An examinee who is successful at an examination and obtained not less than 75% or more of the marks prescribed in a subject shall be declared to have passed the examination with Distinction in that subject.

16. Provision of Ordinance No. 7a– relating to the condonation of Deficiency of marks for passing an examination and of ordinance No. 10 relating to examinations and compartments as amended from time to time shall apply to the Examination under this direction.
17. An unsuccessful examinee at any of the examination of Bachelor of Cosmetic Technology shall have an option to carry her/his Sessional Examination/Internal assessment college assessment marks for Theory/Practical examinations to her/his successive attempt(s) at the examination. The examinee however can forgo her/his Sessional Examination/Internal assessment marks in subject/subjects in which case she/he shall be examined for total marks comprising of theory /practical and college assessment together at her/his successive attempt(s).
18. As soon as possible after the examinations but not later than 30th June next following in case of examination held in March-April and 26th February next following, in case of examination held in October-November, the Board of Exams shall publish a list of successful examinees. List of successful examinees at the Eighth semester of Bachelor of Cosmetic Technology examination shall be arranged in the First and Second Division as envisaged in clause 14 of the ordinance and names of examinee passing the said examination as whole in the minimum prescribed period and obtaining the prescribed number of places in the first or second Division shall be arranged in order of Merit as provided in the examination in General Ordinance No. 6.
19. Notwithstanding anything to the contrary in this direction, no person shall be admitted to this examination, if she/he already passed the same examination or an equivalent examination thereto of other statutory university.
20. Educational tour of 6 – 10 days duration shall be compulsory after second year and short tour of 1 – 3 days duration shall be compulsory after first year of Bachelor of Cosmetic Technology.
21. Successful examinees at the I,II,III,IV,V,VI,VII,VIII semesters of Bachelor of Cosmetic Technology Examination shall be entitled to receive certificate signed by Registrar, titled Bachelor of Cosmetic Technology, Semester I, II, III , IV,V,VI,VII,VIII respectively and those successful at all the exams of Bachelor of Cosmetic Technology shall on payment of the prescribed fee receive a degree in the prescribed form, signed by the Vice-Chancellor, at the convocation to be held by the University.
22. The Scheme of Examination shall be as per Appendix: A(1),A(2),A(3),A(4),A(5),A(6),A(7) and A(8) (Semester pattern) . The details / title of the theory papers can be suitably modified considering the need of the subject without disturbing the main structure.
23. With the issuance of this direction The Ordinance No. 14 of 2009, governing the examinations leading to award of Bachelor of Cosmetic Technology 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.

Nagpur

sd/-

Date : 21-6-2016

(Dr. Siddharthavinayaka P. Kane)
Vice Chancellor

Appendix A(1)

EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY
SEMESTER – I

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|------|-------------------------------|----------------|------------------------|-------|---------|------------------|----------------------------|----------------------|
| | THEORY | | | | | Periods | Periods | Hrs. |
| 1 | S1-T1 Cosmetic Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S1-T2 Anatomy & Physiology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S1-T3 Organic Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S1-T4 Physical Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S1-T5 Natural Cosmetic Agents | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S1-T6 Elementary Mathematics | 10 | 40 | 50 | 20 | 4 | - | 2 |
| | PRACTICAL | | | | | | | |
| 1 | S1-P1 Cosmetic Chemistry | - | - | - | - | - | 4 | - |
| 2 | S1-P2 Anatomy & Physiology | - | - | - | - | - | 4 | - |
| 3 | S1-P3 Organic Chemistry | - | - | - | - | - | 4 | - |
| 4 | S1-P4 Physical Chemistry | - | - | - | - | - | 4 | - |
| 5 | S1-P5 Natural Cosmetic Agents | - | - | - | - | - | 4 | - |
| | | | | 300 | | 24 | 20 | |

Appendix A(2)

**EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY
SEMESTER – II**

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|-------------|------------------------------------|------------------------|---------------------------------|--------------|----------------|--------------------------|-------------------------------------|-------------------------------|
| | THEORY | | | | | Periods | Periods | Hrs. |
| 1 | S2-T1 Cosmetic Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S2-T2 Anatomy & Physiology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S2-T3 Organic Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S2-T4 Physical Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S2-T5 Natural Cosmetic Agents | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S2-T6 English Communication Skills | 10 | 40 | 50 | 20 | 4 | - | 2 |
| | PRACTICAL | | | | | | | |
| 1 | S2-P1 Cosmetic Chemistry | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 2 | S2-P2 Anatomy & Physiology | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 3 | S2-P3 Organic Chemistry | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 4 | S2-P4 Physical Chemistry | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 5 | S2-P5 Natural Cosmetic Agents | 20 | 80 | 100 | 50 | - | 4 | 3 |
| | | | | 800 | | 24 | 20 | |

Appendix A (3)

EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY SEMESTER – III

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|------------------|---|----------------|------------------------|-------|---------|------------------|----------------------------|----------------------|
| THEORY | | | | | | Periods | Periods | Hrs. |
| 1 | S3-T1 Cosmetic Technology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S3-T2 Instrumental Methods of Analysis | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S3-T3 Cosmetic Engineering | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S3-T4 Cosmetic Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S3-T5 Drug & Cosmetic Laws | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S3-T6 Introductory Pharmacology and Toxicology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| PRACTICAL | | | | | | | | |
| 1 | S3-P1 Cosmetic Technology | - | - | - | - | - | 4 | - |
| 2 | S3-P2 Instrumental Methods of Analysis | - | - | - | - | - | 4 | - |
| 3 | S3-P3 Cosmetic Engineering | - | - | - | - | - | 4 | - |
| 4 | S3-P4 Cosmetic Chemistry | - | - | - | - | - | 4 | - |
| 5 | S3-P5 Beauty Culture | - | - | - | - | - | 4 | - |
| | | | | 300 | | 24 | 20 | |

Appendix A (4)

EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY
SEMESTER – IV

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|-----------|--|----------------|------------------------|-------|---------|------------------|----------------------------|----------------------|
| THEORY | | | | | | Periods | Periods | Hrs. |
| 1 | S4-T1 Cosmetic Technology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S4-T2 Instrumental Methods of Analysis | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S4-T3 Cosmetic Engineering | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S4-T4 Cosmetic Chemistry | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S4-T5 Drug & Cosmetic Laws | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S4-T6 Introductory Pharmacology and Toxicology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| PRACTICAL | | | | | | | | |
| 1 | S4-P1 Cosmetic Technology | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 2 | S4-P2 Instrumental Methods of Analysis | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 3 | S4-P3 Cosmetic Engineering | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 4 | S4-P4 Cosmetic Chemistry | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 5 | S4-P5 Beauty Culture | 20 | 80 | 100 | 50 | - | 4 | 3 |
| | | | | 800 | | 24 | 20 | |

Appendix A (5)

**EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY
SEMISTER- V**

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|-------------|-------------------------------------|------------------------|---------------------------------|--------------|----------------|--------------------------|-------------------------------------|-------------------------------|
| | THEORY | | | | | Periods | Periods | Hrs. |
| 1 | S5-T1 Perfumes | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S5-T2 Cosmetic Technology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S5-T3 Principles of Cosmeceutics | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S5-T4 Cosmetic Engineering | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S5-T5 Beauty Culture | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S5-T6 Pharmacology and Interactions | 10 | 40 | 50 | 20 | 4 | - | 2 |
| | PRACTICAL | | | | | | | |
| 1 | S5-P1 Perfumes | - | - | - | - | - | 4 | - |
| 2 | S5-P2 Cosmetic Technology | - | - | - | - | - | 4 | - |
| 3 | S5-P3 Principles of Cosmeceutics | - | - | - | - | - | 4 | - |
| 4 | S5-P4 Cosmetic Engineering | - | - | - | - | - | 4 | - |
| 5 | S5-P5 Beauty Culture | - | - | - | - | - | 4 | - |
| | | | | 300 | | 24 | 20 | |

Appendix A (6)

EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY
SEMESTER– VI

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|------|-------------------------------------|----------------|------------------------|-------|---------|------------------|----------------------------|----------------------|
| | THEORY | | | | | Periods | Periods | Hrs. |
| 1 | S6-T1 Perfumes | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S6-T2 Cosmetic Technology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S6-T3 Principles of Cosmeceutics | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S6-T4 Cosmetic Engineering | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S6-T5 Beauty Culture | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S6-T6 Pharmacology and Interactions | 10 | 40 | 50 | 20 | 4 | - | 2 |
| | PRACTICAL | | | | | | | |
| 1 | S6-P1 Perfumes | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 2 | S6-P2 Cosmetic Technology | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 3 | S6-P3 Principles of Cosmeceutics | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 4 | S6-P4 Cosmetic Engineering | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 5 | S6-P5 Beauty Culture | 20 | 80 | 100 | 50 | - | 4 | 3 |
| | | | | 800 | | 24 | 20 | |

Appendix A (7)

**EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY
SEMESTER – VII**

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|-------------|--|------------------------|---------------------------------|--------------|----------------|--------------------------|-------------------------------------|-------------------------------|
| | THEORY | | | | | Periods | Periods | Hrs. |
| 1 | S7-T1 Perfumes & Colours | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S7-T2 Cosmetic Technology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S7-T3 Plant Design | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S7-T4 Quality Assurance Techniques | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S7-T5 Herbal Cosmetics | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S7-T6 Organisation & Management of Industries. | 10 | 40 | 50 | 20 | 4 | - | 2 |
| | PRACTICAL | | | | | | | |
| 1 | S7-P1 Perfumes & Colours | - | - | - | - | - | 4 | - |
| 2 | S7-P2 Cosmetic Technology | - | - | - | - | - | 4 | - |
| 3 | S7-P3 Plant Design | - | - | - | - | - | 4 | - |
| 4 | S7-P4 Quality Assurance Techniques | - | - | - | - | - | 4 | - |
| 5 | S7-P5 Herbal Cosmetics | - | - | - | - | - | 4 | - |
| | | | | 300 | | 24 | 20 | |

Appendix A (8)

**EXAMINATION LEADING TO BACHELOR OF COSMETIC TECHNOLOGY
SEMESTER– VIII**

| S.N. | Subject | Sessi- onal | Marks Uni. Paper | Total | Passing | No. of Theory | Periods Practi- cals | Time for Exam. |
|-------------|--|------------------------|---------------------------------|--------------|----------------|--------------------------|-------------------------------------|-------------------------------|
| | THEORY | | | | | Periods | Periods | Hrs. |
| 1 | S8-T1 Perfumes & Colours | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 2 | S8-T2 Cosmetic Technology | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 3 | S8-T3 Plant Design | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 4 | S8-T4 Quality Assurance Techniques | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 5 | S8-T5 Herbal Cosmetics | 10 | 40 | 50 | 20 | 4 | - | 2 |
| 6 | S8-T6 Organisation & Management of Industries. | 10 | 40 | 50 | 20 | 4 | - | 2 |
| | PRACTICAL | | | | | | | |
| 1 | S8-P1 Perfumes & Colours | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 2 | S8-P2 Cosmetic Technology | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 3 | S8-P3 Plant Design | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 4 | S8-P4 Quality Assurance Techniques | 20 | 80 | 100 | 50 | - | 4 | 3 |
| 5 | S8-P5 Herbal Cosmetics | 20 | 80 | 100 | 50 | - | 4 | 3 |
| | | | | 800 | | 24 | 20 | |

Appendix- A (9)

General Rules and Regulations

A) Pattern of Question Paper

1. The Syllabus of every subject is divided into units.
2. Students have to solve FOUR questions out of SIX questions set covering all units.
3. All questions should have equal weightage.
4. Each Theory paper will be of 2 hours duration.

B) Absorption scheme:

- 1) While switching over to semester pattern, the failure students of yearly pattern will be given FIVE chances, , to clear the examination.
- 2) If an examinee failed to pass the under graduate programme within EIGHT successive years (for Eight semesters degree) from the date of his / her first admission to particular 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.
- 3) After four years from the date of implementation of semester pattern, any student passing-
FIRST year of Bachelor of Cosmetic Technology should be admitted to third semester.
SECOND year of Bachelor of Cosmetic Technology should be admitted to fifth semester.
THIRD year of Bachelor of Cosmetic Technology should be admitted to seventh semester.

Annexure – 1

Instruction to paper setter for Bachelor of Cosmetic Technology

- There are **Five** Units in the subject for theory, the duration of exam is **two** hours.
- The total marks are **40**. The students have to answer **Four** questions of 10 marks each.
- The examiner has to set **six** questions on all topics. Preferably **one** question on each unit and a **last question** based on all units together.
- **Equal** weightage should be given to every unit.

- 4] Endocrine glands and Hormones. (8 Periods)
- 5] Temperature conservation – Temperature regulation and heat balance of body. (2 Periods)

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 – Anotomy and physiology in health and illness – Ross & Wilson
6. Anatomy and physiology for Nurse – Windwood R.S.

S1 – T3

Organic Chemistry

Theory - 40
 Sessional – 10
 Total - 50

- 1] Hydrocarbons (Saturated)
 Alkanes, Tetrahedral natural of carbon, SP^3 hybridisation, isomerism, liquid paraffin, hard paraffin, preparation and reaction of cyclolkanes..... (7 Periods)
- 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. (7 Periods)
- 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. (6 periods)
- 4] Ethers- Definition, preparation, properties and reaction of ethers, diethyl ether, an aesthetic ether, thioether and vinyl ethers. (6 Periods)
- 5] I) Aldehyde & Ketones-Definition and nomenclature, preparation, properties and chemical reaction of aldehyde and ketones. (6 Periods)
- II) Carboxylic Acid – classification, structure, preparation and chemical reaction of monocharboxylic acid. Optical isomerism. (4Periods)

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.

S1 – T4**Physical Chemistry**

Theory - 40
 Sessional – 10
 Total- 50

- 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. (8 periods)
- 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. (8 periods)
- 3] Osmotic pressure, osmosis, semi – permeable membrane, osmotic pressure measurement, laws of osmotic pressure Molecular wt. Calculations. (8 periods)
- 4] Faraday's laws of electrolysis, conductivity of solutions, equivalent conductivity and it's determination, principles of conductometric titration. (6 periods)
- 5] E.M.F. of Galvanic cell, Std. Oxidation Potential of an electrode, glass, calomel, redox electrodes, Principles of potentiometric titration. (6 periods)

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

S1 – T5**Natural Cosmetic Agents**

Theory - 40
 Sessional – 10
 Total - 50

- 1] History, development and role of natural product in cosmetic & medicine. (2Periods)
- 2] Different systems of classification of drugs of natural origin their merits & demerits. (6 Periods)
- 3] Herbs description and morphology of organized and unorganized herbs.
 Organized herbs root, stem, leaf and fruit and seed. Unorganized herbs – mucilage, latex and extracts. (4 Periods)
- 4] 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 (12 Periods)
- 5] 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. (12 Periods)

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

S1 – T6

Elementary Mathematics

- | | | |
|----|--|----------------|
| | | Theory - 40 |
| | | Sessional – 10 |
| | | Total - 50 |
| 1] | Algebra: - Profit and loss, percentage calculation, Logarithms | (6 Periods) |
| 2] | Trigonometry: - Degrees and Radians trigonometric ratios. Identities for sum and difference of angles, multiple angles | (8 Periods) |
| 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. | (8 Periods) |
| 4] | Derivatives | (6 Periods) |
| 5] | Application of Derivatives: a) Maxima, Minima b) Rates and motion c) Velocity acceleration | (8 Periods) |

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)

S1 – P1

Cosmetic Chemistry

- 1] Preparation of Standard solutions: 1 normal, 1 molar, % w/v solution, % v/v solution
- 2] Standardization of volumetric apparatus.
- 3] Volumetric estimation involving Acidimetry, Alkalimetry oxidation & reductions.
- 4] Experiments based on limit tests of chlorides, Arsenic, ions sulphate & Heavy metals.
- 5] Practical significance of MSDS.

S1 – P2**Anatomy & Physiology**

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.

S1 – P3**Organic Chemistry**

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

S1 – P4**Physical Chemistry**

1. Study of surface tension of liquids using a stalagmometer.
2. Study of Viscosity of liquids using Ostwald's Viscometer.
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.

S1 – P5**Natural Cosmetic Agents**

- 1]. Carbohydrates:
 - i. Study of organoleptic properties, identification and microscopic studies of:

| | |
|------------------|-----------------|
| a. Rice Starch | b. Maize starch |
| c. Potato starch | d. Wheat starch |
 - ii.

| | |
|----------------|----------------|
| a. Agar | b. Gum Acacia. |
| c. Tragacanth. | d. Gaur Gum |
| e. Pectin | f. Cellulose |
- 2] Study of chemical identification of fixed oils and waxes.
- 3] Detection of Adulteration in Olive oil, Coconut oil, Almond oil, and other vegetable oil.

SEMESTER – II

S2 – T1

Cosmetic Chemistry

Theory - 40
Sessional – 10
Total - 50

- 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. (12 Periods)
- 2] Iodometry and iodimetry, Gravimetric analysis. Quantitative separation, solubility product. Fractional precipitation, CO - & post precipitation Practical aspects of gravimetry and applications. (8 Periods)
- 3] Precipitation titration, Precipitation and complex forming reactions. Argentometric Titration, Gay-Iusac, Volhard's Mohr's and Fujan's Method. Mercuric nitrate titration. (8 Periods)
- 4] Complexometric titration, concepts of complexation and chelation, co-ordination number stability constant, titation curves, metal ion indicator, Masking and demasking agents, types of complexometric titration and applications (12 Periods)
- 5] Determination & significance of acid value, saponification value, iodine value, ester value. (6 Periods)

Reference Books:

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

S2 – T2

Anatomy & Physiology

Theory - 40
Sessional – 10
Total - 50

- 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 (12 Periods)
- 2] Respiratory system – Anatomy of organs, mechanism of respiration. (6 Periods)
- 3] Digestive system – Anatomy of digestive organs, Digestion of carbohydrate, protein and fat. (6 Periods)
- 4] Excretory system – organs of excretion, structure of kidney, Mechanism

of urine formation. (6 Periods)

- 5] Nervous system – CNS, Brain, anatomy in short, spinal cord, ganglion cranial nerves, reflex action and reflex arch. (6 Periods)

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.

S2 – T3

Organic Chemistry

Theory - 40
Sessional – 10
Total - 50

- 1] Halohydrocarbon: Preparation and reaction of alkyl halide and Grignard reagents and chloroform. (6 periods)
- 2] Alcohols – Definition, classification, preparation, properties and chemical reaction of alcohols, fermentation, manufacture of ethyl alcohol, proof spirit, denatured alcohol, glycol and glycerol. (8 periods)
- 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) – Preparation & Properties.
iv) Aromatic carboxylic acids (Benzoic and Cinnamic acid, Salicylic acid.) (7 periods)
- 4] Fats & Oil : Definition, uses, properties. Analysis of fats and oils. Application of fats and oils in cosmetics. (7 periods)
- 5] I) Proteins and Amino Acid : Introduction, Peptides, amino Acids, definition, hydrolysis, polypeptides, qualitative test and colour reaction, essential amino acid. (7 periods)
II) Carbohydrates and Glucose : Classification and Qualitative test, structure of Glucose, Lactose (excluding derivation). (5 periods)

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.

S2 – T4**Physical Chemistry**

Theory - 40
 Sessional – 10
 Total- 50

- 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. (8 periods)
- 2] Solutions,; Raoult's law, and it's application, molecular weight determination by measuring vapour pressure, Boiling Pt. & freezing point. (8 periods)
- 3] Law of mass action, Le-Chatelier's principle, homogeneous gaseous equilibria and homogeneous equilibria in liquid system. (8 periods)
- 4] Chemical kinetics: Introduction, molecularity, order and rate of reaction. Kinetics of first and second order reaction, their characteristics and some methods of determination. (8 periods)
- 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. (8 periods)

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.

S2 – T5**Natural Cosmetic Agents**

Theory - 40
 Sessional – 10
 Total - 50

- 1] Adulteration - types of adulteration, Method of adulteration and methods of detection of adulteration in Natural ingredients. (9 Periods)
- 2] Resin and balsum -
 a) Definition, classification and general identification tests.
 b) Study of following - Balsum of Tolu, Balsum of Peru, Benzoin, Storax, Colophony, Asafoetida. (9 Periods)
- 3] Tannins – Definition, Classification and Identification test.
 Study of the following – Black Catechu, Tannic Acid, Amla, Behra, Hirda, Arjun, Pale catechu, Ashok. (9 Periods)
- 4] Study of mineral ingredients.
 Kaolin, Bentonite, Talc., Fuller's earth, Mica, Calamine. (5 Periods)
- 5] Herbs description and morphology of organized and unorganized herbs. (4 Periods)

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

S2 – T6**English Communication Skills**

Theory - 40
Sessional – 10
Total - 50

- 1] Writing skills:- Letter Writing, Informal letter, Formal letter, Bio-data/Resume, job Application (7 Periods)
- 2] Report Writing: Dialogue writing, Advertisement (5 Periods)
- 3] Personality Development: Effective Public speaking, Goal setting, time management, stress management (7 Periods)
- 4] Speech Writing : View and Counterview, Expansion of Ideas, completion and Developing a story (5 Periods)
- 5] Listening skills: Loud Reading, Speaking, Conversations, Telephonic conversation. (7 Periods)
- 6] Interview techniques, group discussion, situational role play. (5 Periods)

S2 – P1**Cosmetic Chemistry**

Theory - 80
Sessional – 20
Total - 100

- 1] Preparation and standardization of Ferric 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 Ammonium Thiocyanate. Assay Based on above.
- 5] Gravimetric analysis: experiments based on gravimetric analysis

S2 – P2**Anatomy & Physiology**

Practical - 80
Sessional – 20
Total - 100

- 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] Recording of body temperature, Pulse and Heart rate and Blood Pressure.

S2 – P3**Organic Chemistry**

Practical - 80
Sessional – 20
Total - 100

- 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

S2 – P4**Physical Chemistry**

Practical - 80
Sessional – 20
Total - 100

- 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

S2 – P5

Natural Cosmetic Agents

Practical - 80
Sessional – 20
Total - 100

- 1] Organoleptic study and identification of
 - a. Tolu Balsum
 - b. Peru Balsum
 - c. Benzoin
 - d. Storax
 - e. Colophony
 - f. Asfoetida
- 2] Morphological study and identification of following tannin containing agents:
 - a. Black Catechu.
 - b. Amls
 - c. Behra
 - d. Hirada
 - e. Ashoka Bark
 - f. Arjuna Bark.
- 3] Organoleptic study of Kaolin, Bentonite, Talc., Fuller's earth, Mica, Calamine.

SEMESTER -III

S3 – T1

Cosmetic Technology

Theory - 40
Sessional – 10
Total - 50

- 1] Physical & Chemical properties of agents (Drug & Cosmetics) influencing design of products forms. (6 Periods)
- 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. (8 Periods)
- 3] Surface active agents – definition classification based on chemical nature and HLB scale, properties and significance in cosmetics (8 Periods)
- 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. (8 Periods)
- 5] Hydrocolloids – definition classification, properties and significance in cosmetics (6 Periods)

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

S3 – T2 Instrumental Methods of Analysis.

Theory - 40
Sessional – 10
Total - 50

- 1] Introduction to Instruments used for cosmetic analysis, Classification of instrumental Methods. (5 Periods)
- 2] Spectroscopy: introduction to spectroscopy, electromagnetic radiation- its properties and spectrum. (5 Periods)
- 3] Colorimetric, UV and Visible spectroscopy - Basic Principles, essential parts of spectrophotometers, uses and application of spectrophotometer. Spectrophotometric titration. (10 Periods)
- 4] Flame photometry- Introduction, General principles, Instrumentations and applications (6 Periods)
- 5] Chromatography- Introduction and classification in General Principles, type – columns, paper and thin layer chromatography and their applications. (10 Periods)

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.

S3 – T3 Cosmetic Engineering

Theory - 40
Sessional – 10
Total - 50

- 1] Flow of Fluids:
Fluid statics, monometers, Reynolds No. Bernoulli's Theorem, fluid heads, frictional losses, (9 Periods)
- 2] Measurement of fluid flow meters. Orifice meters, Venturimeter, Pitot tube, Rotameter, displacement meter. (9 Periods)
- 3] Transportation of fluids:
Pipes, pipe joints, (4 Periods)
- 4] Pumps: various types of pumps: reciprocating, Piston, Duplex diaphragm, rotary, centrifugal and turbine pumps. (8 Periods)
- 5] Conveying : Belt, Apron, Buchet, Screw & pneumatic. (6 Periods)

Book Recommended:

1. Bodger & Banchemo : Introduction to chemical Engineering.
2. Mc-cabe & Smith : Unit operations in chemical Engineering.
3. Richardsaon & Coulsoln Vol. I & II : Chemical Engineering.
4. Hougen & Watson : Material & Energy Balances Part – I

S3 – T4**Cosmetic Chemistry**

Theory - 40
 Sessional – 10
 Total - 50

- 1] Amino Acids :
 Classification, essential and non-essential amino acids, ketogenic & glycolytic amino acids, Zwitterions. Physical & Chemical properties of amino acids with respect to their use in cosmetic preparations .Their wide applications in cosmetics. **8 periods**
- 2] 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. **7 periods**
- 3] Enzymes :
 Definition, nomenclature & classification. Mechanism of enzyme action. Coenzymes & Prosthetic group. Properties of enzymes. Their industrial uses with respect to cosmetic and pharmaceutical industries. **8 periods**
- 4] 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. **7 periods**
- 5] I) Synthetic Surfactants :
 Classification, commercial, commercial surfactants, cosmetic uses. **3 periods**

 II) Insoluble Metallic soaps:
 Methods of manufacture and uses. **3 periods**

Book Recommended:

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

S3 –T5**Drug & Cosmetic Laws**

Theory - 40
 Sessional – 10
 Total - 50

- 1] Drugs & Cosmetic Acts and Rules (with reference to cosmetics). (12 Periods)
- 2] Drugs and Magic Remedies Act. Objectionable Advertisements. (3 Periods)
- 3] Prevention of Cruelty to Animal Act. (3 Periods)
- 4] The Medicinal and Toilet preparations (Excise duties) Acts and Rules. (6 Periods)
- 5] Schedule S & schedule Q of D & C act. (6 Periods)
- 6] Schedule M (ii) of Drug and Cosmetic Act with G.M.P. (6 Periods)

Books recommended:

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

S3 – T6 Introductory Pharmacology & Toxicology

Theory - 40
Sessional – 10
Total - 50

- 1] Scope of Pharmacology in Cosmetics, Terminologies and Definitions **(4 Periods)**
- 2] Routes of Administration of drug, giving special emphasis on Topical route, their advantages and disadvantages. **(8 Periods)**
- 3] Various processes of absorption of drug and the factors affecting absorption. Disposition of drug. **(10 Periods)**
- 4] General mechanism of drug action, site of drug action, type of drug action. **(10 Periods)**
- 5] Material safety data sheet (MSDS) its scope, significance during cosmetic material handling with examples. **(4 Periods)**

Books recommended:

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

S3 – P1 Cosmetic Technology

- 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 etc.

S3 – P2 Instrumental Methods of Analysis.

- 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

S3 – P3**Cosmetic Engineering**

- 1] Use on Instruments, Practice in lettering construction & uses of plain diagonal, vernier scales and scale of chords.
- 2] Projections of points, lines and planes.
- 3] Section of solids.

Book Recommended:

1. Elementary Drawing – N. D. Bhatt.

S3 – P4**Cosmetic Chemistry**

- 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.

S3 – P5**Beauty Culture**

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.
 - a. Hot wax treatment
 - b. Cold wax treatment
 - i) Leg waxing
 - ii) Hand waxing
 - iii) Under arm waxing.
4. Bleaching :
 - i) Preparation of paste.
 - ii) Patch test
 - iii) Face bleaching
 - iv) Hand bleaching
 - v) Leg bleaching
 - vi) Precautions.

Books recommended:

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

SEMESTER – IV

S4 – T1

Cosmetic Technology

Theory - 40
Sessional – 10
Total - 50

- 1] Bisphasic liquid formulations:
Emulsions & Suspensions. Emulsions – types, identification of emulsions, preparation, Suspensions – Flocculated and non-flocculated suspensions, selection of wetting suspending and dispensing agents, preparation and stability. (10 Periods)
- 2] Preservatives- origin of contamination, factors influencing the effectiveness of preservatives, Ideal characters, uses and safety aspects (4 Periods)
- 3] Semisolid formulations:
Ointments, paste, creams, jellies, sticks, selection of ideal bases, preparation and stability and packing. (8 Periods)
- 4] Solid formulations - Bulk powders, incorporation of different varieties of powders viz. dusting, compact, face and talcum. (8Periods)
- 5] Incompatibility – physical and chemical (6 Periods)

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

S4 – T2

Instrumental Methods of Analysis.

Practical- 40
Sessional – 10
Total- 50

- 1] Raman Spectroscopy.- Introduction, principle, Instrumentation, applications (6 Periods)
- 2] Polarimetry:- Introduction, optical activity, General Principles, apparatus, application in the determination of optical rotation and specific optical rotation of liquid and solid substances. (8 Periods)
- 3] pH measurement: by pH indicators and by Pontentiometric method (pH meter)
Its Instrumentation and applications. (8 Periods)
- 4] Refretometry – Introduction to refractive index, theory and principle of Abbe's
Refrecotmeter, its application (8 Periods)

- 5] Conductometry:- Introduction, laws and definition of conductance, specific conductance, equivalent conductance, molecular conductance.Principles, instrumentation and applications.
(6 Periods)

Book Recommended:

5. Instrumental Methods of Analysis – Dean, Willar
6. Instrumental Methods of Analysis – Ewing.
7. Quantitative Inorganic Analysis – A.I. Vogel
8. Commercial Method of Analysis – Shall be Biffer.

S4 – T3

Cosmetic Engineering

Theory - 40
Sessional – 10
Total - 50

- 1] Humidification and air conditioning:
Definitions, Humidity charts and uses, wet bulb theory, determination of Humidity, Humidifiers and dehumidifiers. (8 Periods)
- 2] 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 (8 Periods)
- 3] Radiations, Black body, Emmissivity, mometry, (6 Periods)
- 4] Heaters, Heat interchangers, Parallel and countercurrent Heat Exchangers, Finned tube heat changers. (6 Periods)
- 5] Fundamental concepts of material & energy balances:
Units & Dimensions, dimensional analysis, material & energy balances for operations without chemical reactions. (8 Periods)

Book Recommended:

1. Bedger & Banhero : 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

S4 – T4

Cosmetic Chemistry

Practical- 40
Sessional – 10
Total - 50

- 1] 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. (8 periods)

- 2] I) Humectants and Polyols :
Choice of humectant, unusual humectants, special uses of humectants.
Lanolin : Source, composition, properties, derivatives & uses. **(5 periods)**
- II) Viscosity Modifiers – eg, gum, alcohol and electrolytes, solvents etc. **(3 periods)**
- 3] 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. **(10 periods)**
- 4] Pearls and Pearl Essence :
Definitions, commercial uses, production methods, synthetic pearly substances. **(4 periods)**
- 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 periods)**

Book Recommended:

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

S4 –T5

Drug & Cosmetic Laws

| | | |
|----|--|----------------|
| | | Theory - 40 |
| | | Sessional – 10 |
| | | Total - 50 |
| 1] | Pharmacy Act. | (8 Periods) |
| 2] | Factory Act. | (6 Periods) |
| 3] | Contract Act. | (4 Periods) |
| 4] | Shop & Establishment Act. | (4 Periods) |
| 5] | Sales Promotion Act. | (6 Periods) |
| 6] | Standards of weight and measures Act (with reference to cosmetics) | (4 Periods) |
| 7] | Patenting in India & Abroad. | (4 Periods) |

Books recommended:

4. Drugs & Cosmetic Acts & Rules. Govt. of India Publication.
5. T.B. of Forensic pharmacy by M. Mittal
6. IP, BP, NF, USP.

S4 – T6

Introductory Pharmacology & Toxicology

| | | |
|----|--|---------------------|
| | | Theory - 40 |
| | | Sessional – 10 |
| | | Total - 50 |
| 1] | Pharmacology of Topical drugs, Introduction. Types of Topical drugs: | (10 Periods) |
| | a Protective absorbents | |
| | c. Demulcents. | |
| | d. Emollients | |

- e. Astringents and antiperspirants-deodorant
 - f. Irritants, Rubefaciens and Vesicants.
 - g. Sclerosing Agents.
 - h. Caustics and Escharotics
 - i. Keratolytics (Desquamating Agents)
 - j. Cleansing preparations.
 - k. 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 **(5 Periods)**
- 3] Pharmacology of Cosmeceuticals used for Antiaging, Antiwrinkle, Fairness-bleaching & Sunscreens, Antidandruff, Anti inflamatory, Anti acne/pimple, Pigmentation etc. **(5 Periods)**
- 4] Autocoids: histamine, its pharmacological role and antihistamines. **(8 Periods)**
- 5] Heavy metals and metal antagonist: Symptoms and management of mercury, Arsenic, & lead poisoning. **(8 Periods)**

Books recommended:

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

S4 – P1 Cosmetic Technology

Practical- 80
 Sessional – 20
 Total - 100

- 1] Stability study of suspension – by use of thickening agents, flocculation agents.
- 2] Preparation of ointment bases – i) hydrocarbon ii) Absorbable iii) Water Soluble iv) Water miscible.
- 3] Preparation of paste & jelly bases.
- 4] Preparation of simple stick bases.
- 5] Preparation of face powders

S4 – P2 Instrumental Methods of Analysis.

Practical- 80
 Sessional – 20
 Total- 100

- 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.

S4 – P3 Cosmetic Engineering

Practical- 80
Sessional – 20
Total - 100

- 1] Elementary ideas of I st angle and IIIrd angle projectors. Top view, front view and sections.
- 2] Projections of simple solids such as cones, cylinders, prisms of pyramids with different positions and ground lines.
- 3] Isometric projections of simple solids.

Book Recommended:

1. Elementary Drawing – N. D. Bhatt.

S4 – P4 Cosmetic Chemistry

Practical- 80
Sessional – 20
Total- 100

- 1] Qualitative test for lipids.
- 2] Determination of Saponification value of fats.
- 3] Determination of Acid value of fats.
- 4] Determination of Iodin number of fats.
- 5] Estimation of Ascorbic Acid (Vit. C)
- 6] Identification test and analysis of lanolin.
- 7] Identification test and analysis of Kaolin.
- 8] Identification test and analysis of Bentonite.
- 9] Analysis of water as per IP, BP and USP.

S4 – P5 Beauty Culture

Practical- 80
Sessional – 20
Total - 100

1. Manicure:
- a. Requirement for manicure
 - b. Procedure
 - c. Nail shaping
 - d. Cuticle removing
 - e. Hand Massage.
 - f. Application of varnish
 - g. Nail extenders and Nail decoration
2. Pedicure:
- a. Requirement for Pedicure

- b. Procedure.
 - c. Massage for pedicure.
 - d. Application of varnish
3. Electric Manicure.
 4. Nail Arts / Nail designing
 5. Application of false nails

Books recommended:

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

SEMESTER - V

S5 – T1

Perfumes

Theory - 40
Sessional – 10
Total- 50

- 1] Essential oils – Production equipment, water distillation, Steam distillation, steam and water distillation, treatment of condensate water after distillation. (9 Periods)
- 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. (9 Periods)
- 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 Periods)
- 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 Periods)
- 5] Alcohols - (6 Periods)
 - 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.

S5 – T2**Cosmetic Technology**

Theory - 40
 Sessional – 10
 Total - 50

- 1] Soaps –Manufacturing technology, ingredients, types of soaps-bathing, toilet soaps, antibacterial soaps transparent soaps, liquid soaps syndates (synthetic detergent bars)
 (6 Periods)
- 2] I) Humectants – Introduction, drying out, types, hygroscopicity, stability, safety, skin moisturization.
 (4 Periods)
- II) Antioxidant : Introduction, General oxidative theory, measurement of oxidation and assessments of oxidant efficiency, choice of antioxidants.
 (6 Periods)
- 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.
 (8 Periods)
- 4] Astringents and skin tonics : Introduction, types of astringents and astringent products and formulation aspects, antiperspirant and deodorants.
 (6 Periods)
- 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 Periods)

Books Recommended:

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

S5 – T3**Principle of Cosmeceutics**

Theory - 40
 Sessional – 10
 Total- 50

- 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 Periods)
- 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 Periods)
- 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.
 (9 Periods)
- 4] Emulsion:

Types, detection, thermodynamic considerations, mechanism of droplet stabilization, theories of emulsification, properties and stability of emulsion, assessment of emulsion self life.

(9 Periods)

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 Periods)

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.

S5 – T4

Cosmetic Engineering

Theory - 40
Sessional – 10
Total - 50

- 1] 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. (5 Periods)
- 2] Study of size reduction equipments, Crushers, Grinders, Cutting m/s, open circuit and closed circuit grinding. (5 Periods)
- 3] 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. (10 Periods)
- 4] Filtration : Theory of filtration, filter aids, selection of filters, study of filter press, Rotary, drum leaf filters, meta filters, disc filters, membrane filters. (8 Periods)
- 5] Air: Methods for quality air, HEPA filters class of air, laminar flow - +ve & -ve pressure in manufacturing area. (8 Periods)

Book Recommended :

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

S5 – T5

Beauty Culture

Theory - 40
Sessional – 10
Total - 50

- 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. (8 Periods)
- 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 Periods)
- 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 (8 Periods)
- 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 Periods)
- 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. (8 Periods)

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

S5 – T6

Pharmacology & Interaction

Theory - 40
Sessional – 10
Total - 50

- 1] Study of skin and its following appendages.
i. Nails
ii. Hair
iii. Sweat gland.
iv. Sebaceous gland (10 Periods)
- 2] Study of side effects of cosmetic ingredients & products coming in contact with above body parts.
(5 Periods)
- 3] Study of disorders of skin and treatment (5 Periods)
- 4] Study of disorders and treatment of teeth. Study of side effects of dentifrices mouth

wash & gargals.

(6 Periods)

- 5] Skin pigmentation, disorder of pigmentation, various pigmentary and depigmentary agents used on above disorders. (10 Periods)

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.

S5 – P1

Perfumes

- 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.

S5 – P2

Cosmetic Technology

Preparation of :

1. Cleansing Creams.
2. Cold Cream.
3. Vanishing Cream.
4. Emollient Cream.
5. Emollient Cream
6. Hand Cream
7. Face-Packs- Masks.
8. Astringent preparation.

S5 – P3

Principles of Cosmeceutics

- 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

S5 – P4 Cosmetic Engineering

- 1] To calibrate orifice meter & to obtain the coefficient of discharge for the same.
- 2] To calibrate venturimeter & to obtain the coefficient of discharge for the same.
- 3] To study sedimentation process of setting of Ca CO₃ slurry and find area of thickener
- 4] To study relationship between drag coefficient & modified Reynolds No. for a body falling through liquid.
- 5] To carry out sieve analysis.

S5 – P5 Beauty Culture

- 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 acne-fied skin
- 6] Aroma Therapy
 - a) Aroma Facial for different skin type

SEMESTER -VI

S6 – T1

Perfumes

Theory - 40
Sessional – 10
Total- 50

- 1] A) Fixatives – Sources, Classification, Chemical composition and uses -
i) Animal Source – Civet, Musk, Ambergris.
ii) Resinous Fixatives – Benzoin, 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 Periods)
- 2] Odorous materials manufactured synthetically by (Reaction and flow diagrams) Condensation – Coumarin, Diphenyl oxide and cinnamic aldehyde and Esterification – Benzyl acetate, Benzyl Benzoate. (8 Periods)
- 3] Odorous materials manufactured synthetically by (Reaction and flow diagrams) Nitration – Musk ambrette, musk xylene and Musk Ketone. (8 Periods)
- 4] Odorous materials manufactured synthetically by (Reaction and flow diagrams) Oxidation – Vanillin, Heleotropins, anisaldehyde, Benzaldehyde (8 Periods)
- 5] Odorous materials manufactured synthetically by (Reaction and flow diagrams) Grignard's Process – Phenyl ethyl alcohol and Hydrogenation – Citronellal from citronellal (6 Periods)

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, soaps & Cosmetics – Poucher.

S6 – T2

Cosmetic Technology

Theory - 40
Sessional – 10
Total - 50

- 1] I) Productive creams and hand cleansers: Introduction; barrier material; protective cream and gels and formulation aspects. (6 Periods)
- II) Skin lightener of bleaches: Formulation aspects. (4 Periods)
- 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. (8 Periods)

- 3] Skin Products for Babies: introduction, skin problems in babies, functions, requirement of body products, safety of baby products, example, formulations. (6 Periods)
- 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 Periods)
- 5] Eye make-up, Introduction, Mascara, Eyeshadow, Eyeliner, Eyebrow pencil. (6 Periods)

Books Recommended:

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

S6 – T3

Principles of Cosmeceutics

Theory - 40
Sessional – 10
Total- 50

- 1] Distribution phenomenon:
Distribution of solute between immiscible liquids, ionic dissociation and molecular association influencing partitioning, Applications of distribution phenomenon. (6 Periods)
- 2] Colloidal Dispersion:
Properties of colloids – Optical, kinetic and electrical and their applicability in determining molecular weight of polymer, stability of colloidal systems mechanism of peptization. (9 Periods)
- 3] Rheology:
Types of flow behaviour, thixotropy and thixotropic co-efficient measurement of various rheological properties, factors influencing rheology of dispersed systems. (8 Periods)
- 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. (9 Periods)
- 5] Complexation and methods of detection of complexes. (4 Periods)

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.

S6 – T4**Cosmetic Engineering**

Theory - 40
 Sessional – 10
 Total - 50

- 1] Mixing: Agitation of liquids, study of mixers for liquid – liquid gas liquid, dry powder, pastes & plastic masses. (6 Periods)
- 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, (10 Periods)
- 3] Separation of Azeotropes (Binary & Ternary) and liquids of similar volatility. Rectification & fractionation. (5 Periods)
- 4] Evaporation: factors affecting evaporation, study of short tube long tube, agitated, film, evaporator performance of rubular evaporator, improving efficiency of evaporation. (8 Periods)
- 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. (7 Periods)

Book Recommended :

4. Introduction to Chemical Engineering – Badger & Banchero.
5. Unit Operation in Chemical Engineering Mc-cabe & Smith.
6. Chemical Engineering Vol. I & II – Richarson & Coulson.

S6 – T5**Beauty Culture**

Theory - 80
 Sessional – 20
 Total - 100

- 1] I) Beautician’s attitude to client and professional ethics (2 Periods)
 II) Different shapes of faces (2 Periods)
- 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. (8 Periods)
- 3] Different types of make-ups
 a) Day Make-up
 b) Evening Make-up.
 c) Party Make-up.

- d) Bridal Make-up (8 Periods)
- 4] I) Corrective Make-up for
 a) Face shapes
 b) Eyes
 c) Lips
 c) Nose (6 Periods)
- II) Application of false eye lashes method and contraindication (2 Periods)
- 5] Hair – Structure and types of hair
 a) General problems and care for hair.
 b) Natural Dyes and Chemical Dyes
 d) Shampoo & Conditioner (8 Periods)

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

S6 – T6

Pharmacology & Interaction

Theory - 40
 Sessional – 10
 Total - 50

- 1] Allergy and antigen – antibody reaction, types of Hypersensitivity reaction and disorders due to hyper sensitivity reactions and a topic dermatitis. (10 Periods)
- 2] Dermatitis – various types and their clinical feature. (12 Periods)
- v. Acute Toxic contact dermatitis.
 - vi. Allergic contact dermatitis.
 - vii. Irritant contact dermatitis.
 - viii. Phototoxic contact dermatitis.
- 3] Disorders and treatment of feet, foot cosmetics. (2 Periods)
- 4] Methods for animal testing for safety evaluation of cosmetic (6 Periods)
- 5] Dermatological testing as per BIS specification patch testing, repeated insult patch testing cumulative irritation test photoallergic test phogotoxicity test. (6 Periods)

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.

S6 – P1

Perfumes

Practical - 80
 Sessional – 20
 Total - 100

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

S6 – P2

Cosmetic Technology

Practical- 80
 Sessional – 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

S6 – P3

Principles of Cosmeceutics

Practical- 80
 Sessional –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.

S6 – P4**Cosmetic Engineering**

Practical- 80
 Sessional – 20
 Total - 100

- 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.

S6 – P5**Beauty Culture - II**

Practical- 80
 Sessional– 20
 Total- 100

- 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
- 5] Hair styles & Hair setting :
 - i. Formal
 - ii. Informal
 - iii. Treatment for Hair.

SEMESTER - VII

S7 – T1

Perfumes & Colours

Theory - 40
Sessional – 10
Total- 50

- 1] Specially perfumed products – formulation and processing of :
 - a. Alcoholic fragrance solution
 - b. Emulsified and solid fragrances.
 - c. Solubilized perfumes.(6 Periods)
- 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 Periods)
- 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. (9 Periods)
- 4] Revision, adaptation and incorporation of perfumes in skin care cosmetic products like creams, lotions, powders, soaps. (6 Periods)
- 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. (9 Periods)

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

S7 – T2

Cosmetic Technology

Theory - 40
Sessional – 10
Total - 50

- 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 Periods)
- 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 Periods)

- 3] I) Hair Tonics & Conditioners:
Introduction – formulation of medicated hair tonics, conditioners, evaluation of conditioning, hair thickeners, rinses. (6 Periods)
- II) Hair strengtheners:
Introduction, hot comb method, caustic preparations, chemical hair reducing preparations. (6 Periods)
- 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 Periods)
- 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 thioglycolate lotions, tonicity, hair strengtheners preparations. (6 Periods)

Books recommended:

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

S7 – T3

Plant Design

Theory - 40
Sessional – 10
Total - 50

- 1] Design considerations: Diff. Materials of construction. Material selection, Corrosion & Physical, Mechanical, Iron Steel, Aluminum and their alloys. (6 Periods)
- 2] Heat Exchangers L: Introduction, Types, Design of Shell and Tube Heat Exchangers. (6 Periods)
- 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. (9 Periods)
- 4] Design of machine elements : Shafts, Keys, Pins, Couplings belts and Pulleys, Chain drivers, Gear Drives, Riveted Joints, Welded Joints, Treaded Fasteners. (9 Periods)
- 5] Selection of Plant location, Plant site, Factory building: Study of different factors affecting selection. (6 Periods)

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

S7 – T4**Quality Assurance Techniques.**

Theory - 40
Sessional – 10
Total- 50

- 1] Importance of quality control in cosmetic preparations & guidelines for hygienic manufacture of cosmetics. (7 Periods)
- 2] ISO: Its significance, role and importance in cosmetic industry. (7 Periods)
Validation of cosmetic manufacturing.
- 3] Stability testing of various cosmetics products – accelerated stability study.
- Study of Rheological properties of semisolid preparation.
- ICH guidelines. (6 Periods)
- 4] 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. (12 Periods)
- 5] Testing of packaging components used for cosmetic products. (4 Periods)

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. Microbiology by Pelzer & Reed
14. Microbiology by Sally.

S7 – T5**Herbal Cosmetics**

Theory - 40
 Sessional – 10
 Total - 50

- 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,
 (12 Periods)
- 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,
 (10 Periods)
- 3] Study of storage of herbal actives in cosmetics and store house. (6 Periods)
- 4] Preparation of herbal actives in cosmetics for commercial market. (6 Periods)
- 5] Future scope of Herbal ingredients in Cosmetic Industry (2 Periods)

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

S7 – T6**Organization & Management of Industries**

Theory - 40
 Sessional – 10
 Total 50

- 1] Entrepreneurial Development:
 Process of generating business ideas, Technical & Economic feasibility - development detailed project report for implementation. (10 Periods)
- 2] Types of importance sources of finances and Taxation. (6 Periods)
- 3] Financial Management:
 Management of working capital, Cost factors in capital investment total product cost, depreciation cost profitability and rate of return analysis cost benefit analysis,
 (10 Periods)
- 4] Personnel Management:
 Different methods of developing personnel skills. (5 Periods)
- 5] Different management development programmes. Orientation Appreciation, Application and Education, measuring impact of training and development. (4 Periods)

S7- P1**Perfumes & Colors**

- 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

S7 – P2**Cosmetic Technology**

- 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

S7 – P3**Plant Design**

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

S7 – P4**Quality Assurance Techniques**

- 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.

S7 – P5 Herbal Cosmetic

- 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,

SEMESTER – VIII

S8 – T1 Perfumes & Colours

Theory - 40
Sessional – 10
Total- 50

- 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. (12 Periods)
- 2] Classification of colors.- Natural (sources, properties), Synthetic based on chemical structures, in organic colours. (8 Periods)
- 3] Preparation of colour solutions and incorporation of colours in skin care and hair care products including soaps. (6 Periods)
- 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. (4 Periods)
- 5] Determination of colors and Color matching of marketed products. (6 Periods)

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

S8 – T2**Cosmetic Technology**

Theory - 40
 Sessional – 10
 Total - 50

- 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.
 (8 Periods)
- 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 Periods)
- 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 Periods)
- 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 lacquer, Base coats and top coats, Enamel remover, Nail drier, plastic finger nails and elongators, Nail mending compositions.
 (6 Periods)
- 5] I) Dentifrices :
 Basic requirement of a dentifrice. Tooth – paste, Basic structure ingredients, formulation of toothpaste, manufacture of toothpaste, powders, manufacture of toothpastes, solid dentifrices, performance tests Abrasive action, luster, the toothbrush and tooth brushing, Denture cleansers.
 (6 Periods)
- II) Mouthwashes :
 Introduction : Choice of antibacterial agents, flavouring of mouthwashes, Aerosol mouth freshener.
 (4 Periods)

Books recommended:

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

S8 – T3**Plant Design**

Theory - 40
 Sessional – 10
 Total - 50

- 1] Process hazards & safety measure in equipment design: Introduction, Hazards in process Industries, analysis of hazards, Safety Measures, Safety measure in equipment designs.
 (9 Periods)
- 2] Reaction vessel : Material of construction, agitation, classification of reaction vessels,

heating systems, design, consideration. (8 Periods)

3] Agitators : Introduction, types, power requirement, Design of agitation system components, Drive for Agitators. (7 Periods)

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

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

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

S8 – T4

Quality Assurance Techniques.

Theory - 40
Sessional – 10
Total- 50

- 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. (16 Periods)
- 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 (14 Periods)
- 3] Principle methods of analysis to enumerate various types of organisms e.g. APC. (2 Periods)
- 4] Isolation of identification of gram +ve & -ve organisms. (2 Periods)
- 5] Efficacy testing of preservative. (2 Periods)

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: Pharmaceuical Analysis.
6. A.H. Backett & J. B. Stanlake: Practical Pharmaceuical Chemistry.
7. Garret : Text Book & Pharmaceuical Analysis
8. A. L. Vogel : Quantative inorganic Analysis.
9. Ewing : Instrumental Method of Chemical Analysis
10. Connoers : Text Book of Pharmaceuical Analysis
11. Higuchi : Pharmaceuical Analysis
12. Microbiology by Pelzer & Reed

S8 – T5**Herbal Cosmetics**

Theory - 40
Sessional – 10
Total - 50

- 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,
(12 Periods)
- 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)
(12 Periods)
- 3] Various methods of extraction employed for herbal constituents. (6 Periods)
- 4] Formulating appropriate cosmetic products by incorporating herbal actives in skin care products.:
Creams, powder, lotion (3 Periods)
- 5] Formulating appropriate cosmetic products by incorporating herbal actives in hair care products:
Hair oil, shampoo, hair tonics (3 Periods)

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

S8 – T6**Organization & Management of Industries**

Theory - 40
 Sessional – 10
 Total 50

- 1] Marketing Management:
 Sales forecasting – Objects, Methods, Budget Preparation, marketing Research, Consumer & Product research. (6 Periods)
- 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. (12 Periods)
- 3] Plant Location and Layout considerations with special reference to:
 Material Procurement and utilization, production planning and control, requirement and defective utilization of manpower. (6 Periods)
- 4] Fundamental of Business Organization & Management – Industrial safety. (6 Periods)
- 5] 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 Periods)

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.

S8- P1**Perfumes & Colors**

Practical- 80
 Sessional- 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.

S8 – P2 Cosmetic Technology

Practical- 80
 Sessional – 20
 Total - 100

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

S8 – P3 Plant Design

Practical- 80
 Sessional – 20
 Total - 100

Sheets Based on –

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

S8 – P4 Quality Assurance Techniques.

Theory - 80
 Sessional – 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.

S8 – P5

Herbal Cosmetic

Practical- 80

Sessional – 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)
