

॥ सा विद्या या विमुक्तये ॥



स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

“ज्ञानतीर्थ” परिसर, विष्णुपुरी, नांदेड - ४३१६०६ (महाराष्ट्र)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED

“Dnyanteerth”, Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)

Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'A' Grade

ACADEMIC (1-BOARD OF STUDIES) SECTION

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संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील द्वितीय वर्षाचे CBCS Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, दिनांक २० जून २०२० रोजी संपन्न झालेल्या ४७व्या मा. विद्या परिषद बैठकीतील विषय क्र.११/४७-२०२०च्या ठरावानुसार प्रस्तुत विद्यापीठाच्या संलग्नित महाविद्यालयांतील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील द्वितीय वर्षाचे खालील विषयांचे C.B.C.S. (Choice Based Credit System) Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून लागू करण्यात येत आहेत.

1. B.Sc.-II Year-Biophysics
2. B.Sc.-II Year-Bioinformatics
3. B.Sc.-II Year-Biotechnology
4. B.Sc.-II Year-Biotechnology (Vocational)
5. B.Sc.-II Year-Food Science
6. B.Sc.-II Year-Botany
7. B.Sc.-II Year-Horticulture
8. B.Sc.-II Year-Agro Chemical Fertilizers
9. B.Sc.-II Year-Analytical Chemistry
10. B.Sc.-II Year-Biochemistry
11. B.Sc.-II Year-Chemistry
12. B.Sc.-II Year-Dyes & Drugs Chemistry
13. B.Sc.-II Year-Industrial Chemistry
14. B.C.A. (Bachelor of Computer Application)-II Year
15. B.I.T. (Bachelor of Information Technology)-II Year
16. B.Sc.-II Year-Computer Science
17. B.Sc.-II Year-Network Technology
18. B.Sc.-II Year-Computer Application (Optional)
19. B.Sc.-II Year-Computer Science (Optional)
20. B.Sc.-II Year-Information Technology (Optional)
21. B.Sc.-II Year-Software Engineering
22. B.Sc.-II Year-Dairy Science
23. B.Sc.-II Year-Electronics
24. B.Sc.-II Year-Environmental Science
25. B.Sc.-II Year-Fishery Science
26. B.Sc.-II Year-Geology
27. B.Sc.-II Year-Mathematics
28. B.Sc.-II Year-Microbiology
29. B.Sc.-II year Agricultural Microbiology
30. B.Sc.-II Year-Physics
31. B.Sc.-II Year Statistics
32. B.Sc.-II Year-Zoology

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या www.srtmun.ac.in या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी.

‘ज्ञानतीर्थ’ परिसर,
विष्णुपुरी, नांदेड - ४३१ ६०६.
जा.क्र.: शैक्षणिक-१/परिपत्रक/पदवी-सीबीसीएस अभ्यासक्रम/
२०२०-२१/३३३

दिनांक : १५.०७.२०२०.

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) मा. कुलसचिव यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- २) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
- ५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
- ६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

स्वाक्षरित / -

उपकुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग

Swami Ramanand Teerth Marathwada University, Nanded
 Choice Based Credit System (CBCS) Course Structure
 Faculty of Science
B. Sc. Second Year Syllabus
 Semester Pattern effective from June 2020
 Subject: Dyes and Drugs

Semester	Course No.	Name of the Course	Instruction Hrs/ week	Total period	CA	ESE	Total Marks	Credits
III	CCDD III (Section A)	Study of Pigments, azo, and azoic Dyes. (PVI)	03	45	10	40	50	2
	CCDD III (Section B)	Synthesis and Application of Drugs acting on CNS.(P-VII)	03	45	10	40	50	2
	CCDDP II [CCDDIII & IV (Section A)]	Practical's based on P-VI & P-VIII (P-X)	04 04	Practicals 08 08	05 05	20 20	25 25	1 1
	SECDD I	SEC I (Anyone Skill from optional)	03	45	25	25	50	(02)*
IV	CCDD IV (Section A)	Study of dyes from some important classes. (P-VIII)	03	45	10	40	50	2
	CCDD IV(Section B)	Synthesis and Application of Chemotherapeutic Drugs (P-IX)	03	45	10	40	50	2
	CCDDP III [CCDD III & IV (Section B)]	Practicals based on P-VII & P-IX (P-XI)	04 04	Practicals 08 08	05 05	20 20	25 25	1 1
	SECDD II	SEC II (Anyone Skill from optional)	02	02	25	25	50	(02)*
Total credits semester III and IV								12(04)*

Note: ESE of CCDDPII, CCDDPIII & SECDD I, SECDDSECDD II should be evaluated annually

Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure

B. Sc. second year (Semester- III)

Semester Pattern effective from June -2020

DYES AND DRUGS

CCDD III (Section A)

STUDY OF PIGMENTS, AZO AND AZOIC DYES (PVI)

Credits: 02 (Marks: 50)

Periods: 45

Objectives	To acquire basic knowledge about pigments, azo and azoic dyes. Study of dyes from xanthene, Diphenyl and triphenyl methane dyes, anthraquinone and Heterocyclic dyes, Study of drugs acting on central nervous system (CNS). Introduction to chemotherapeutic drugs with their detailed study.
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UNIT I

Azo-Dyes – Synthesis and applications :

10 periods

- (i) Methyl orange (ii) Methyl red (iii) Orange I (iv) Orange II
(v) Orange IV (vi) Fast red A (vii) Metanil yellow (viii) Aniline yellow
(ix) Butter yellow (x) Congo red (xi) Diamond black F
(xii) Chromotrope 2B (xiii) Erichrome black T

UNIT II

Dyeing and fastness properties of azo dyes :

10 periods

- 1) General consideration, dyeing and fastness properties of
a) Azodyes for wool b) Azodyes for silk c) Azodyes for leather d) Direct cotton dyes
e) Acid colours on cotton

UNIT III

Azoic Dyes :

15 periods

- 1) Introduction, Chemical constitution of naphthols.
2) Preparation of Naphthols, Naphthols for yellow shade, azoic shades.
3) Steps involved in azoic dyeing.
4) Application of azoic dyes on fibres other than cotton (wool, silk, cellulose, acetate)
5) Fastness properties of azoic shades top light, chlorine, rubbing, alkali.
6) Azoic colours in printing, printing composition. Types of azoic colours in printing.

UNIT IV

Pigments:

10 periods

- a. Introduction
b. Use of synthetic organic pigments
c. Requirements of organic pigments
d. Types of pigments
e. Methods of pigment printing
f. Styles of printing
g. Pigment printing, advantages and disadvantages of pigment application
h. Chemical nature of pigments
i. Binders and fixers, thickeners.

Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure

B. Sc. second year (Semester- III)

Semester Pattern effective from June -2020

DYES AND DRUGS

CCDD III (Section B)

SYNTHESIS AND APPLICATION OF DRUGS ACTING ON CNS (P-VII)

Credits: 02 (Marks: 50)

Periods: 45

UNIT I

I. Anaesthetics :

15 periods

- 1) Introduction and Classification of anesthetics.
- 2) Characteristics of ideal anesthetics.
- 3) Study of volatile general anesthetics: i) Diethyl ether ii) methyl-n-propyl ether iii) divinyl ether iv) ethylene v) cyclopropane vi) nitrous oxide vii) chloroform viii) fluothane, ix) trilene x) viadril
- 4) Study of non-volatile general anesthetics
i) Avertin and ii) pentothal Sodium
- 5) Study of local anaesthetics
i) - Eucatine, ii) orthocaine, iii) Benzocaine, iv) procaine v) xylocaine

UNIT II

I. Study of sedatives and hypnotics and Anticonvulsants

10 periods

- 1) Introduction and Classification of sedatives and hypnotics and Anticonvulsants
- 2) Synthesis and applications of
i) Ethchlorvynol ii) chloral iii) Paraldehyde, iv) Sulphonal, v) Trional vi) tetronal vii) Novonal, viii) persedon ix) trichloroethyl urethane, x) phenobarbitone, xi) Pentobarbitone

UNIT III

I. Study of Tranquillizer (selective Modifiers of CNS)

10 periods

- 1) Introduction and Classification of Tranquillizer (selective Modifiers of CNS)
- 2) Synthesis and applications of
i) Chlorpromazine ii) Prochlorperazine iii) Chlorprothixene iv) Thiothixene v) Haldol vi) Diazepam vii) Oxazepam viii) Chlordiazepoxide.

UNIT IV

I. Study of analgesics, antipyretics

10 periods

- 1) Introduction and classification of analgesics, antipyretics and anti-inflammatory.
 - 2) Mechanism of action of analgesics
 - 3) Mechanism of action of antipyretics
 - 4) Synthesis and applications of : i) antipyrine ii) Novalgine iii) acetanilide iv) Phenacetin v) paracetamol vi) Aspirin, vii) salol, viii) Irgaphyrin
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Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure

B. Sc. second year (Semester- IV)

Semester Pattern effective from June -2020

DYES AND DRUGS

CCDD IV (Section A)

STUDY OF DYES FROM SOME IMPORTANT CLASSES (P-VIII)

Credits: 02 (Marks: 50)

Periods: 45

UNIT I

I. Diphenyl and triphenyl methane dyes :

15 periods

- 1) Diphenyl methane dyes : Introduction, synthesis and application of i). Auramine O and ii) Auramine G.
- 2) Triphenyl methane dyes : Introduction. Classification, General properties, constitution of Triphenyl methane dyes (w.r.t. pararosaniline)
- 3) Synthesis and applications of following triphenyl methane dyes i) Malachite green ii) Rosaniline iii) Pararosaniline iv) aniline blue v) Methyl violet vi) crystal violet
- 4) Phenolphthalein – Synthesis, properties and application.

UNIT II

I. Anthraquinone Dyes :

10 periods

- 1) Introduction and classification of Anthraquinone Dyes
- 2) Synthesis and applications of dyes i) Alizarin ii) Alizarin Red S iii) Alizarin orange iv) Alizarin blue v) Alizarin cyanine green vi) Indanthrone blue vii) Flavanthrone viii) Pyranthrone

UNIT III

I. Xanthene Dyes:

10 periods

- 1) Introduction, classification and General properties of Xanthene Dyes
- 2) Synthesis and applications of dyes i) Fluorescein ii) Eosin iii) Erythrosine iv) Rhodamine G v) Rhodamine B vi) Pyronine G.

UNIT IV

I. Heterocyclic Dyes :

10 periods

- 1) Introduction and Classification of heterocyclic dyes
 - 2) Synthesis and applications of i) Indophenol blue ii) Phenylene blue iii) Methylene blue iv) Primuline v) Gallocyanine vi) Acridine yellow vii) Sensitol red viii) Quinolin blue ix) Sensitol red x) Ethyl Red xi) Safranin T.
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Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure

B. Sc. second year (Semester- IV)

Semester Pattern effective from June -2020

DYES AND DRUGS

CCDD IV (Section B)

SYNTHESIS AND APPLICATION OF CHEMOTHERAPEUTIC DRUGS (P-IX)

Credits: 02 (Marks: 50)

Periods: 45

UNIT I

I. Sulphonamides:

15 periods

- 1) Introduction and discovery of sulphonamides.
- 2) Classification of sulphonamides.
- 3) Mechanism of action of sulpha drug.
- 4) Synthesis and applications of following sulphonamides: i) Sulphacetamide ii) Sulphapyridine, iii) sulphadiazine iv) Sulphamerazine v) Sulphamezathine, vi) Sulphamethoxazole vii) Succinyl Sulphathiazole, viii) Sulphaceamide ix) sulphamylon

UNIT II

II. Antimalerials

10 periods

- 1) Introduction and historical background of antimalerials Classification
- 2) Classification of antimalerials
- 3) Pathogenecity and Chemotherapy of malarial parasite
- 4) Study of the following antimalerials with uses : i) Camoquine ii) Mepacrine iii) Azacrine iv) Paludrine

UNIT III

I. Antiseptics:

10 periods

- 1) Introduction and classification of antiseptics,
- 2) standardization of disinfectant (Phenol coefficient)
- 3) Study of following antiseptics: i) Alcohols ii) Formaldehyde iii) Urotropine iv) merbromin v) Thiomersal vi) chlorine and dakin's solution vii) Chloramine T viii) Dichloroamine T ix) Halazone x) Chlorazodin xi) Iodoform xii) Vioform xiii) Thymol xiv) Dettol xv) Nitrofurazone

UNIT IV

I. Antibiotics:

10 periods

- 1) Introduction, history of discovery of antibiotic.
 - 2) classification of antibiotics
 - 3) Study of following antibiotics with an introduction, production, isolation, properties, clinical uses and mechanism of action. i) Penicillin ii) Chloramphenicol
 - 4) Structure, activity, relationship of chloramphenicol and penicillin
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Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure
B. Sc. Second year Semester Pattern effective from June -2020

DYES AND DRUGS

Practical Paper: CCDDP II [CCDD III & IV (Section A)]

Credits: 02

(Marks: 50)

(Any sixteen experiments are to be covered)

1. Preparation of dye intermediates

- | | |
|------------------------|-----------------------|
| a. Anthraquinone | b. m-nitroaniline |
| c. P-Bromo acetanilide | d. Succinic anhydride |
| e. Sulphanilic acid | f. Benzoquinone |

2. Preparation of dyes :

- | | |
|------------------|-------------------|
| a. Fluorescein | b. Eosin |
| c. Methyl orange | d. Mordant Yellow |
| e. Fast green O | f Orange I |

3. Estimation of following Aryl amines by using NaNO_2 solution

- a. Aniline b. P-Nitroaniline c. P-chloro aniline

4. Dyeing methods

- Direct dyeing of wool and silk with Orange II
 - Direct dyeing of wool and silk with Eosin
 - Direct dyeing of wool and silk with Malachite green
 - Direct dyeing of wool and silk with Crystal violet
 - Direct dyeing of cotton with congo red
 - Dyeing of cotton with Malachite green by Mordant dyeing method
 - Acid dyeing of wool with Orange II
 - Dyeing of cotton by vat dyeing method
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Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure
B. Sc. Second year Semester Pattern effective from June -2020

DYES AND DRUGS

Practical Paper: CCDDP III [CCDD III & IV (Section B)]

Credits: 02

(Marks: 50)

(Any sixteen experiments are to be covered)

1. Preparation of Drug Intermediates

- a. 3-methyl-1-phenylpyrazol-5-one
- b. Acetyl acetone
- c. Ethyl acetoacetate
- d. Salicylaldehyde
- e. 4-hydroxybenzoic acid

2. Preparation of Drugs

- a. Chloramine-T
- b. Dichloramine-T
- c. Methyl salicylate
- d. sulphonamide
- e. phenacetin
- e. Benzocaine

3. Assay of Drugs

- a. Aspirin
- b. Sulphonamide
- c. Paracetamol

4. Tests for Identity and purity of Drugs

- a. Analgin,
- b. Aspirin,
- c. Vitamin C,
- d. Pencillin G,
- e. Chlorocresol,
- f. Chloroform,
- g. Chloroquinephosphate,
- h. Cresol
- h. Erythromycin,
- i. Isoniazide,
- j. sulphadiazine

5. Qualitative Tests

- a. Ephidrine
- b. Belladonna
- c. Nicotine
- d. Glucose
- e. sucrose
- f. Starch
- g. Protein

Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure
B. Sc. second year (Semester- III)
Semester Pattern effective from June -2020
DYES AND DRUGS

Skill Enhancement Course SECDD-I (A)

STUDY OF NATURAL AND SYNTHETIC FOOD COLOURS (02 Credits)

1. Introduction to food colours
2. History of food colorants
3. Study of Natural food colours carotenoids, chlorophyll, anthocyanin, betanin and turmeric.
4. Preparation of Natural food colours (Red Pink, Green, Orange, yellow, Blue, Purple, Brown, Tan and Black.

Practical : Preparation of any four colours from natural source.

Introduction to Synthetic dyes approved for colouring food stuff

5. Synthesis and study of

- | | | |
|-------------------|----------------------|-------------------|
| a. Tartrazine, | b. Quinoline yellow, | c. Sunset yellow, |
| d. Amaranth | e. erythrosine | f. Ponceau 4R |
| g. Indigo carmine | h. Green S | i. Black PN |

6. Purity and requirement of colours for use in foodstuffs
7. Qualitative and quantitative analysis of synthetic colours in foodstuff.

Practical: Identification of synthetic food colours by paper chromatography and spectrophotometrically (In Jam, Burphy, Bundi etc.)

OR

STUDY OF NATURAL AND SYNTHETIC INK DYES (02 Credits)

1. Introduction to Natural and Synthetic Ink dyes, Application Principles
2. Ink-Jet printing Technology
 - a. Dyes for Ink-Jet Application 1. Black dyes, 2. Yellow dyes,
 - b. 3. Magenta dyes, 4. cyan ink-jet dyes and 5. Solvent dyes.
 - c. Fields of Application for Ink-Jet Printing,
 - d. Properties of Ink-Jet Prints
 - e. Requirements for ink jet inks, formulation of ink-jet inks: aqueous, solvent, and hot melt.

Practical :

- i. Formulation of aqueous ink-jet inks.
- ii. Formulation Of solvent ink-jet inks.

3. Dyes for Writing, Drawing, and Marking
 - a. Water-soluble dyes for fountain pen inks and fiber-tip pens
 - b. Solvent dyes for ballpoint pen inks
 - c. Solvent dyes for fiber-tip pens
 - d. Water-soluble dyes for fluorescent marker inks
 - e. Basic and solvent dyes for fluorescent marker inks
 - f. Inks for Writing, Drawing, and Marking Inks

Practical : (Any three)

- i. Formulation of a blue fountain pen ink
 - ii. Formulation of fiber-tip pen ink
 - iii. Formulation of ball point pen ink
 - iv. formulation of a solvent-containing marking ink
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Swami Ramanand Teerth Marathwada University Nanded

Choice Based Credit System (CBCS) Course Structure

B. Sc. second year (Semester- III)

Semester Pattern effective from June -2020

DYES AND DRUGS

Skill Enhancement Course SECDD-II (A)

STUDY OF ANTHELMINTIC AND ANTIPROTOZOAL AGENTS (02 Credits)

Introduction to natural and synthetic anthelmintic agents. Characteristics of anthelmintic agents.

Classification

According to their chemical structure

According to their action

Study of piperazine, Diethylcarbamazine Citrate, Albendazole, Mebendazole, Thiabendazole, oxfamiquine, pyrantel pamoate and miracil D.

Activity: 1) Assay of albendazole Direct titrimetric and spectrophotometric method
 2) Anthelmintic Activity of Tulsi Leaves (Ocimum Sanctum Linn) [An In-Vitro Comparative Study]

Antiprotozoal Agents

Introduction to antiprotozoal agents. Characteristics of antiprotozoal agents.

Study of Diloxanide furoate, Nitazoxanide, Furazolidone, metronidazole, tinidazole, norfloxacin, quinidochlor, diidoquin, carbarsone, acetarsone

Activity: 1) Assay of metronidazole by non-aqueous titration method
 2) Assay of Diloxanide furoate by non-aqueous titration method

OR

STUDY OF RECENT HEMATOLOGICAL AGENTS (02 Credits)

Introduction and types of hematological agents.

Mechanism of clotting.

Anticoagulant agents : 1) Heparine, 2) Dicoumarol, 3) Pelentan (ethyl biscoumacetate), 4) Warfarin, 5) phenindione, 6) citric acid salt, 7) Dabigatran, 8) Rivaroxaban and 9) Apixaban

Antiplatelet drug : 1) Aspirin, 2) Clopidogrel, 3) Prasugrel and Ticlopidine

Coagulants: Vitamin k and analogs, Proteins and oxidized cellulose

Antianemic Drugs: 1) erythropoietin, 2) Iron preparations, 3) Deferoxamine, 4) Iron dextran, 5) Vitamin B-12 and 6) Folic acid

Activity: Assay of Aspirin, dicoumarol, pelentan and few contemporary iron preparations.

Reference Books:

1. Synthetic dyes : Grudeep R. Chatwal.
2. Synthetic Dyes : K. Venkatraman Vol. I, Academic Press , New York.
3. Synthetic Dyes : K. Venkatraman Vol. I, Academic Press , New York.
4. Chemistry of Dyes and Principles of Dying : V.A. Shenai, Sevak Publication, Bombay
5. Introduction to dyes : Rastogi
6. Industrial dyes : K. Hunger, Wiley-VCH publication
7. Fundamental process of dye chemistry: Hans Eduard, Fierz-david and and Louis Blangey, Inter science publishers, New York.
8. Synthetic Drugs : Grudeep R. Chatwal.
9. Medicinal Chemistry by Ashutosh Kar
10. An introduction to drugs , Singh and Rangnekar
11. British Pharmacopeia
12. Indian pharmacopeia
13. Pharmacology and pharmacotherapeutics : Satoskar and Bhandarkar
14. Practical Organic Chemistry : Singh , Gupta and Bajpai
15. Practical Organic chemistry : I Vogel
16. Practical Pharmaceutical chemistry A.H. Beckett and J.B. Stelnake
17. Advanced Practical Medicinal Chemistry by Ashutosh Kar
18. Pharmaceutical Drug Analysis by Ashutosh Kar.
19. Dyes synthesis :Dr.N.K.Patel

Course Outcome

CO1	Lern the nature classification and applications of pigments,azo and azoic dyes.
CO2	Get Acquainted with Drugs acting on CNS like anaesthetics,Tranquillizer,sedatives, analgesics antipyretics.
CO3	To explore synthesis and applications of some dyes of some special classes lke DPM, TPM,Xanthene and heterocyclic dyes
CO4	Know the synthesis and applications of Chemotherapeutic drugs
CO5	Acquire practical Skill regarding preparation of dyes, dye intermediates dyeing methods and dye estimations.
CO6	Acquire practical Skill regarding preparation of drug,drug intermediate,assay of drug test for indentity and purity of drugs And qualitative study of drugs..