॥ सा विद्या या विमुक्तये ॥

स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

'ज्ञानतीर्थ', विष्णुपुरी, नांदेड – ४३१ ६०६ (महाराष्ट्र राज्य) भारत

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY, NANDED

'Dnyanteerth', Vishnupuri, Nanded - 431 606 (Maharashtra State) INDIA

Established on 17th September, 1994, Recognized By the UGC U/s 2(f) and 12(B), NAAC Re-accredited with'B++' grade

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विज्ञान व तंत्रज्ञान विद्याशाखे अंतर्गत राष्ट्रीय शैक्षणिक धोरण २०२० नुसार पदवी प्रथम वर्षाचे अभ्यासक्रम (Syllabus) शैक्षणिक वर्ष २०२४–२५ पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, या विद्यापीठा अंतर्गत येणा–या सर्व संलग्नित महाविद्यालयामध्ये शैक्षणिक वर्ष २०२४–२५ पासून पदवीस्तरावर राष्ट्रीय शैक्षणिक धोरण –२०२० लागू करण्याच्या दृष्टीकोनातून विज्ञान व तंत्रज्ञान विद्याशाखे अंतर्गत येणा–या अभ्यासमंडळांनी तयार केलेल्या पदवी प्रथम वर्षाचे अभ्यासक्रमांना मा. विद्यापरिषदेने दिनांक १५ मे २०२४ रोजी संपन्न झालेल्या बैठकीतील विषय क्रमांक १५/५९–२०२४ च्या ठरावाअन्वये मान्यता प्रदान केली आहे. त्यानुसार विज्ञान व तंत्रज्ञान विद्याशाखेतील खालील बी. एस्सी प्रथम वर्षाचे अभ्यासक्रम (Syllabus) लागू करण्यात येत आहेत.

01 B. Sc. I year - Biotechnolgy
02 B. Sc. I year – Bio-informatics
03 B. Sc. I year – Biotechnology (Vocational)
04 B. Sc. I year- Dyes and Druge
05 B. Sc. I year – Industrial Chemistry
06 B. Sc. I year – Agrochemical and Fertilizers
07 B. Sc. I year – Chemistry (General)
08 B. Sc. I year – Analytical Chemisrty
09 B. Sc. I year – Biochemistry
10 B. Sc. I year – Statistics
11 B. Sc. I year – Zoology
12 B. Sc. I year – Biotechnolgy (NMD College Hingoli)

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

'ज्ञानतीर्थ' परिसर,
विष्णुपुरी, नांदेड – ४३१ ६०६.
जा.क्र.:शै–१/एनइपी/विवत्रंविपदवी/२०२४–२५/123
दिनांक २०.०६.२०२४

डॉ. सरिता लोसरवार
सहा.कुलसचिव
शैक्षणिक (१–अभ्यासमंडळ) विभाग

प्रत : १) मा. आधिष्ठाता, विज्ञान व तंत्रज्ञान विद्याशाखा, प्रस्तुत विद्यापीठ.
२) मा. संचालक, परीक्षा व मुंल्यमापन मंडळ, प्रस्तुत विद्यापीठ.
३) मा. प्राचार्य, सर्व संबधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
४) मा. प्राचार्य, न्यू मॉडल डिग्री कॉलेज हिंगोली.
५) सिस्टीम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ. याना देवून कळविण्यात येते की, सदर परिपत्रक संकेतस्थळावर प्रसिध्द करण्यात यावे.

B. Sc. First year (Semester - I)

Introduction to Dyes(P-I)

(SDDCCT1101)

Credits: 02 Marks: 50 Time: 30 hr

Objectives: To acquire basic knowledge about the subject Dyes and Drugs, Introduction Textile fibers, Dyeing processes, Basic operation in dyeing. Historical Evaluation of Drug,classification of drug, Chemistry pro-drug , medicinal micro biology and immunity.Raw materials in dye industries, dyestuff intermediates, dosage forms, routes of administration.

UNIT I

Basic Introduction to Dyes: 08 p

a) Introduction - Definition of dye. Difference between dye and other colouring matter. Requisites of true dye.

b) Historical development from natural to synthetic dyes.

i) Era of natural dyes. ii) Era of synthetic dye. iii) Pollution problems

c) Nomenclature of dyes.

i) Commercial naming of dyes

. ii) Colour index and naming of dyes

UNIT II

2.1Classification of dyes: 14 p

a) Introduction to classification of dyes b) Classification of dyes on the basis of application to fiber. i) Acid dyes ii) Basis of cationic dyes iii) Direct dyes iv) Mordant or adjective dyes v) Azoic dyes vi) Vat dyes vii) Sulphur dyes viii) Disperse dyes xi) Reactive dyes

2.2 Synthesis and use of aromatic compounds as dyestuff intermediates –

a) nitrobenzene from benzene. b) dinitrobenzene from nitrobenzene c) benzene suphonic acidfrom benzene d) napthionic acid e) p-nitroanline f) aniline by reduction of nitrobenzene g) chlorobenzene from benzene h) phenol from chlorobenzene i) salicylic acid from phenol j)acetophenone from benzene k) benzyl alcohol from toluene l) benzaldehyde from toluene.

UNIT III

3.1 Textile fibers 06 p

Different types of fibers:

a) Cotton b) Wool c) Silk d) Cellulose acetate e) Polyamide f) Polyester g) Polyacrylonitrile h) Polyolefin.

3.2 Dyeing process: 05 p

Interaction of dye with fibers

i) Ionic interaction. ii) Hydrogen bonds. iii) Vander Waal's interaction. iv) Covalent bonds. b) Cross Dyeing

UNIT IV .

Basic Operation in dyeing process and Colour and chemical constitution of dyes: 12p

4.1 Basic Operations in dyeing process

. i) Preparation of the fibers. ii) Preparation of the dye bath. iii) Application of the dye. iv) Finishing.

4.2 Methods of Dyeing . i) Direct dyeing. ii) Vat dyeing. iii) Mordant dyeing. iv) Disperse dyeing. v) Formation of dye on fibers. vi) Dyeing of the wool with acid dyes.

4.3 Colour and chemical constitution of dyes:

a) Study ofBathochromic, Hypsochromic, hypochromic and hperchromic effect with examples.

b) Colour and chemical constitution - Definition of colour, colour and wavelength of radiation,

c) Relation between colour and chemical constitution— i) Armstrong theory (qimionoid theory)

Chromophore-Auxochrome theory. –

Chromophore,, Auxochromes and type of Auxochromes

Reference Books:

1. The Chemistry of Synthetic Dyes Vol I and II By K. Venkataraman
2. Synthetic Dyes By Rajbir Singh
3. Synthetic Dyes by Dr. Gurdeep R. Chatwal
4. Synthetic Dyes by M.S. Yadav
5. Dyes and their Intermediates by Chatwal.
6. Introduction to the Chemistry of Dyestuffs by V.A. Shenai,
7. Dyes and Dyeing by Charles E. Pellow;
8. Fundamental Processes of Dye Chemistry by Fierz-David.
9. Synthetic Drugs By Rajbir Singh
10. Synthetic Drugs by Dr. Gurdeep R. Chatwal
11. Synthetic Drugs by S.K. Agarwal Publisher
12. Principles of Organic Medicinal Chemistry by Rama Rao Nadendla

Course Outcome :

CO1 Learn the introduction and classification of dyes, textile fibers
CO2 Know the processes of dyeing and basic operations in dyeing.
CO3 Explaining theories of Color and chemical constitution of Dyes

SDDCCP1101

I yr I sem Paper V

Practical Paper: (P-V)

Credits 02 Marks:50 Time:30 HR

Objectives : .To acquire basic knowledge about preparation of dyes and dye intermediates. To study properties of different textile fibres.

Perform any Twelve Practicals from the following.

1 . Preparation of dye intermediates

a) Acetanilide
b) m-dinitrobenzene
c) p-bromoacetanilide
d) dibenzal acetone
e) 2,4,6 –tribromo aniline,
f) p-nitroacetanilide.
g) Benzenesulphonic acid
h) acetophenone

. Preparation of dyes

1 Phenyl azo- βNapthol
2 Picric acid
3 Orange II
4 Methyl red
5 Aniline yellow
6 .Butter yellow
7 Malachite green
8 Phenolphthalien

Reference Books:

1. Practical Pharmaceutical Chemistry – I By Dr. A. V. Kasture, Dr. S. G. Wadodkar,Mr. S. B. Gokhale
2. Vogel's Textbook of Practical Organic Chemistry
3. British Pharmacopea
4. Indian Pharmacopea
5. Pharmacology and pharmacotherapeutics : Satoskar and Bhandarkar
6. Practical Pharmaceutical chemistry A.H. Beckett and J.B. Stelnake
7. Dyes and their Intermediates by Chatwal.

Course Outcome

1.Learnt the techniques of preparation of dyes and dyestuff intermediates.

B. Sc. First year (Semester - I)

Introduction to Drugs (P-II)

SDDCCT1151

Credit 02 30 hr. Marks : 50

Objectives: To acquire basic knowledge about the subject Drug chemistry, Introduction to different terms in drug chemistry. Historical Evaluation of Drug,classification of drug, Chemistry pro-drug , medicinal micro biology and immunity

UNIT I

1**. 1 Basic Introduction to drugs: 03 p**

a) Concept of drug and qualities of an ideal drug,

b) Some important terms used in study of drugs –

Pharmacy, pharmacology and pharmacophore, pharmacodynamics andpharmacodynamicagents.ii) Metabolite and anti-metabolite.

iii) Pathogen, pathogenicity, chemotherapy and chemotherapeutic agents.

1.2. Historical evolution from natural lo synthetic drugs. 02 p

1.3. Classification of drugs on the basis of their therapeutic actions 04p

a) Drugs acting on central nervous system. b) Drugs stimulating or blocking the peripheral nervoussystem. c) Drugs acting on the cardiovascular, hematopoietic and renal system. d) Chemotherapeutic drugs. e) Vitamins. f) Hormones.

UNIT II .

2.1Chemistry of Pro-drug 03p

a) Introduction b) Application of pro-drug c) Ideal Requirement of pro-drug.
   d) Classification of Pro-drug

2.2 Assay of drugs. 05 p

1) Introduction. 2) Types of assay. a) Chemical assay b) Biological assay i) principles of bio-assay ii) Methods of bio-assay iii)Types of biological systems. 3) Comparison of chemical assay and biological assay. 4) Immunological assay..

UNIT III

3.1Medicinal Microbiology. 04 p

a) Introduction to medicinal microbiology.

b) Classification of bacteria, pathogenic and non-pathogenicbacteria.

c) Study of pathogenicity and chemotherapy of bacteria i) Salmonella ii)Clostridium iii) Pseudomonas iv) Mycobacterium

3.2 Dosage form and Routes of Administration 05P

a) Introduction to dosage forms. b) Variety of dosage forms. c) Importance of dosage forms d) Routes of administration of drugs. e) Advantages and disadvantages of oral route of administration, f) Advantages and disadvantages parenteral route of administration.

UNIT IV

Immunity. 04P

a) Introduction and importance.

b) Immunity – 1) Innate immunity, consideration atspecies, race and individual level. Factors deciding innate immunity.

2) Acquired immunity. a. Active immunity (Vaccines, types of vaccines) i) Prophylactic ii) Curative iii) Diagnostic. b. Passive immunity (Serum, preparation of immune sera)

Reference Books:

1. The Chemistry of Synthetic Dyes Vol I and II By K. Venkataraman
2 Synthetic Drugs By Rajbir Singh
3. Synthetic Drugs by Dr. Gurdeep R. Chatwal
4. Synthetic Drugs by S.K. Agarwal Publisher

5 Indian Pharmacopea

6. Pharmacology and pharmacotherapeutics : Satoskar and Bhandarkar
7 Practical Pharmaceutical chemistry A.H. Beckett and J.B. Stelnake

Course Outcome :

CO1 To Explore the chemistry of pro-drug and role of medicinal micro biology.
CO2 To understand dosage forms, routes of administration and practical knowledge assay of drug.
CO3 Know the application of biostatistics in drug chemistry.

SDDCCP1151

Practical Paper: (P-VI)

Credits 02 Marks:50 Time:30 HR

Objectives : .To acquire basic knowledge about preparation of drugs,and carrying out their assay.

Perform any twelve experiments from the following.

1) Assay of following commercial samples

a) Boric acid
b) Sodium bicarbonate
c) Ferrous sulphate
d) Hydrogen peroxide
e) Iodine solutions (strong and weak)
f) Ascorbic acid
g) Sodium Carbonate
h) Bleaching powder

2) Preparation of drugs

a) Aspirin
b) Iodoform
c) Paracetamol
d) Acetanilide
e) Antipyrine
f) Analgin
g) Noalgin
h) Ibuprofen

1. Synthetic Drugs By Rajbir Singh
2. Synthetic Drugs by Dr. Gurdeep R. Chatwal
3. Synthetic Drugs by S.K. Agarwal Publisher
4. Principles of Organic Medicinal Chemistry by Rama RaoNadendla
5. Practical Pharmaceutical Chemistry – I By Dr. A. V. Kasture, Dr. S. G. Wadodkar, Mr. S. B. Gokhale
6. Vogel's Textbook of Practical Organic Chemistry
7. British Pharmacopea
8. Indian Pharmacopea
9. Pharmacology and pharmacotherapeutics : Satoskar andBhandarkar
10. Practical Pharmaceutical chemistry A.H. Beckett and J.B.Stelnake

Course outcome: 1.Learnt the techniques of preparation of dyes and carrying out their assay.

CHEMISTRY OF COLOURS I

SDDCGE1101

Credits 02 Marks : 50 Time: 30 HR

Objectives : .To acquire basic knowledge about Colour, and Pigments .To study different Dyes and Fibres.

Module 1 **Colour, and Pigments** **08 p**

1.1 Colour definition and features

1.2Types of Colours

1.3 Introduction to Pigments

1.4 Application of Dyes and Pigment

Module 2 Classification of Dyes and Fibres **08 p**

2.1 Classification of Dyes

2.2 Classification of Fibres

2.3 Natural fibres

2.4 synthetic fibres

Module 3 Synthetic Dyes and Fibres **08p**

3.1 Synthetic Fibres

3.2 Polymer Fibres

3.3 Polyesters and Polyamide Fibres

3.4 Polyurethanes, Cellulose and Polyacrylonitrile

Module 4 Pigment chemistry **06p**

4.1 Types of pigments

4.2 Pigments present in plants

4.3 Applications of pigments in different fields.

Outcome: Learnt about Natural and synthetic fibres.

Learnt about pigment and pigment chemistry.

CHEMISTRY OF COLOURS I

SDDCGE1151

HEALTH EDUCATION

Credits 02 Marks:50 Time:30 HR

Objectives : .To acquire basic knowledge about health, and health awareness. .To study concept of nutrition and concept of First Aids..

Unit I

Concept of health: **08 P**

Definition of Health according to WHO ,physical health, mental health, social health, , indicatory of health, concept of disease, natural history of diseases, the disease agents, concept ofprevention of diseases.

Unit II **08P**

Concept of balanced diet.Classification of foods, requirements, diseases induced due to deficiency of proteins, vitamins and minerals-treatment and prevention., Population problem of India.List of deficiency disease.

Unit III

First aid: **06P**

Concept of First Aid, Emergency treatment in shock, snake-bite, burns, poisoning, heart disease, fractures and resuscitation methods, Preparation First Aid Kit.

Unit IV **08P**

A.Environment and health: Airborn and waterborn Disease.Source of water supply, water pollution, purification of water, health and air,noise, light-solid waste disposal and control-medical entomology, .

B.Communicable diseases: Introduction and concept.Causative agents, mode of transmission and prevention. Respiratory infections chickenpox, measles, influenza, diphtheria, whooping cough and tuberculosis.

.**Outcome:** Learnt about Communicable diseases.
Learnt about Nutrition and health.

Reference Books:

1. The Chemistry of Synthetic Dyes Vol I and II By K. Venkataraman
2. U. Satyanarayana & U. Chakrapani – Biochemistry 4th Edition .
3. Medical And Health Sciences - Volume 1

VOCATIONAL AND SKILL ENHANCEMENT COURSE

(SDDCSC 1101)

Credits 02 Marks:50 Time:30 HR

SOME BASIC CONCEPTS IN DYES AND DRUGS I

Objectives : .To acquire basic knowledge raw materials in dye industry.To explore different sources of drugs.

UNIT I

Study of raw material used in dye industries. 05 p

1. Source of primaries – i) Coal tar- Extraction of coal tar primaries by fractional distillation.
ii) Petroleum - extraction of primaries from petroleumsource.

UNIT II

2. Dyestuff intermediates: 12 p

Aliphatic compounds – Synthesis and use of following in Dye industries. a) methyl alcohol b) ethyl alcohol c) ethylene glycol d) glycerol e) chloroform f) chloroacetic acid g) ethyl acetate h)acetic anhydnde i) maleic anhydride j) acetyl chloride k) acetaldehyde l) acetone

UNIT III

2. Physical and chemical factors and biological activity 09p

a) Introduction
b) Physical factors:
i) Structurally specific and non-specific drugs.
ii) Relation of functional group and biological activity:
Effect of i) alkyl group ii) Hydroxyl group iii) Acidic (-COOH and –SO3H) Groups
iv) Halogen v) nitro and nitrite group vi) amino group vii) nitrile group viii) unsaturation
ix) structural isomerism and x)stereoisomerism
iii) Chemical factors: Molecule Negntropy,

UNIT IV

Sources of drugs.04P

Plant,Animal,marine,Mineral sources of drugs with their isolation techniques

Reference Books:

1. The Chemistry of Synthetic Dyes Vol I and II By K. Venkataraman
2. Synthetic Dyes By Rajbir Singh
3. Synthetic Dyes by Dr. Gurdeep R. Chatwal
4. Synthetic Dyes by M.S. Yadav
5. Dyes and their Intermediates by Chatwal.
6. Introduction to the Chemistry of Dyestuffs by V.A. Shenai,
7. Dyes and Dyeing by Charles E. Pellow;

VOCATIONAL AND SKILL ENHANCEMENT COURSE

(SDDCSC 1151)

Credits 02 Marks:50 Time:30 HR

SOME BASIC CONCEPTS IN DYES AND DRUGS II

Objectives: .To acquire basic knowledge about Purity of pharmaceutical substances and limit test.raw materials in dye industry.To study and apply different terms in biostatistics.

UNIT I

Dyestuff intermediates(Aromatic): 05P

1.naphthalene-1 -suphonic acid and naphthalene-2-sulphonic acid from

naphthalene 2. 1-naphthol-4- sulphonic from 1-naphthol 3. crocein acid and schaffer acid 4.sulphanillic acid 5. napthionic acid

UNIT II

Purity of pharmaceutical substances and limit test: 05p

a)Introduction.

b) Permissible impurities in pharmaceutical substances.

c) Test for purity

d) Limit lest for - i) Chloride ii) Sulphate iii) Lead iv) Iron v) Arsenic.

UNIT III

1. Bio-Statistics. 15 p

a) Introduction to bio-statistics and its importance. b) Explanation of the terms with examples: i) Population ii) Biological variables iii) Mean iv) Mode v) Median vi) Accuracy vii) Precision viii) Arithmatic mean ix) Geometric mean x) Standard deviation xi) Mean deviation xii)Range xiii) Normal distribution xiv) Probability xv) Sampling, Numericals

UNIT IV 05 p

i) Mean ii) Mode iii) Median iv) Standard deviation v) Mean deviation vi) Arithmetic mean vii) Probability Numericals

Course Outcomes: Learnt to solve different numerical on biostatistics.

Learnt the concept of limit test

Reference Books:

1. The Chemistry of Synthetic Dyes Vol I and II By K. Venkataraman
2. Synthetic Dyes By Rajbir Singh
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