GOVT. COLLEGE FOR WOMEN

GANDHI NAGAR, JAMMU

Sub criterion-3.3.2

BOOKS AND BOOK CHAPTER

OF

NAAC CRITERION-III

RESEARCH INNOVATIONS AND EXTENSION

2018-2023

Govt. College for Women ★ Gandhi Nagar, Jammu ★ IQAC

Mobile: 094191 – 02359 OFFICE OF THE PRINCIPAL Tele & Fax – 0191 – 2435158
GOVT. COLLEGE FOR WOMEN GANDHI NAGAR, JAMMU
Constituent College of Cluster University of Jammu
E-mail: principal@gcwgandhinagar.com

INDEX

Govt. College for Women ★ IQAC ★ Gandhi Nagar, Jammu

Mobile: 094191 – 02359 OFFICE OF THE PRINCIPAL Tele & Fax – 0191 – 2435158
GOVT. COLLEGE FOR WOMEN GANDHI NAGAR, JAMMU
Constituent College of Cluster University of Jammu
E-mail: principal@gcwgandhinagar.com

26	Dr.Monika Hans	Food Science	88
27	Dr.Sania Hamid	Botany	89
28	Dr.Javid Iqbal	Urdu	90
29	Dr. Meenakshi Bandral	Zoology	91-92
30	Dr. Monika Hans	Food Science	93-96
31	Dr. Nargis Nelofar	Zoology	97-105
32	Dr. Revika Arora	Chemistry	106
33	Dr. Malti Rajput	Chemistry	107-111
34	Dr. Sania Hamid and Dr Meenakshi Sharma	Botany	112-114
35	Dr. Parmjeet Singh	Political Science	115
36	Dr Aran Kumar	Chemistry	116-120
37	Dr. Aran Kumar	Chemistry	121-123
38	Dr Swarn singh	Food Science	124-126
39	Dr Rahul Sharma	Biotechnology	127-128
40	Dr. Aran Kumar	Chemistry	129-132
41	Dr. Aran Kumar	Chemistry	133-137
42	Dr. Aran Kumar	Chemistry	138-143
43	Dr. Aran Kumar	Chemistry	144-147
44	Dr. Aran Kumar	Chemistry	148-151
45	Dr. Aran Kumar	Chemistry	152-154
46	Dr. Aran Kumar	Chemistry	155-159
47	Dr. Aran Kumar	Chemistry	160-163
48	Dr. Javid Iqbal	Urdu	164

Govt. College for Women Gandhi Nagar Jammu IQAC

Convener Criterion: III

Coordinator IQAC

P-1

P-18

AQMCS ISO 9001 Registered

IAS-ANZ

As per new Syllabus

ISBN: 978-93-87659-36-0

1st edition: Feb-2018

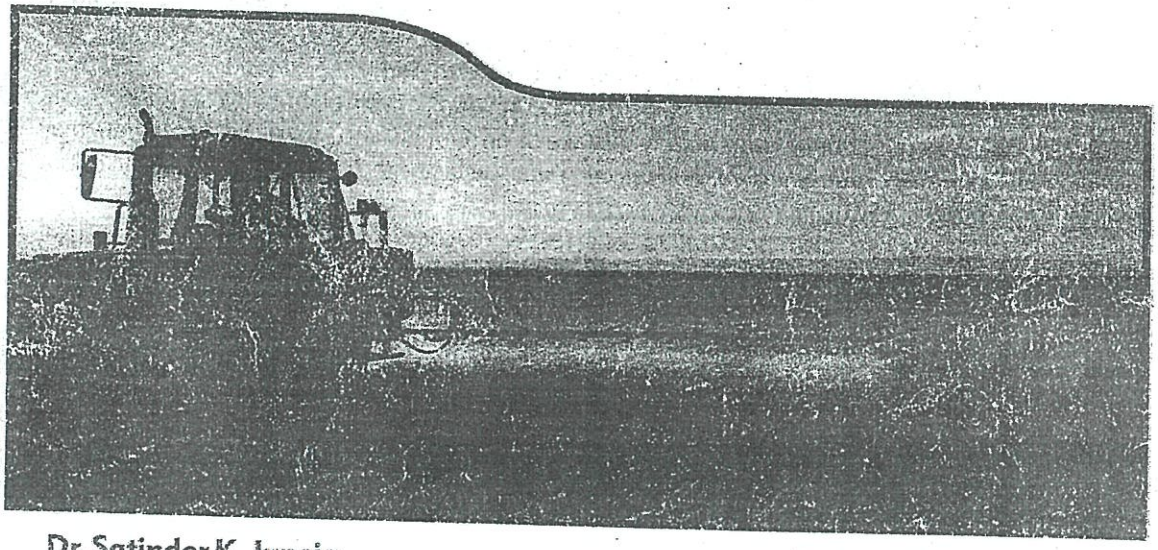
DINESH JMD

A TEXT BOOK OF

PESTICIDE CHEMISTRY

(Skill Enhancement Course)

For the students of Class B.Sc. (Sem. IV) of Jammu University, Cluster University of Jammu, GCW Parade and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
G.G.M. Science College, Jammu.

2019

Price { ₹ 70/-

S. DINESH & Co.

Sister Concern : S. VINESH & Co.

• JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

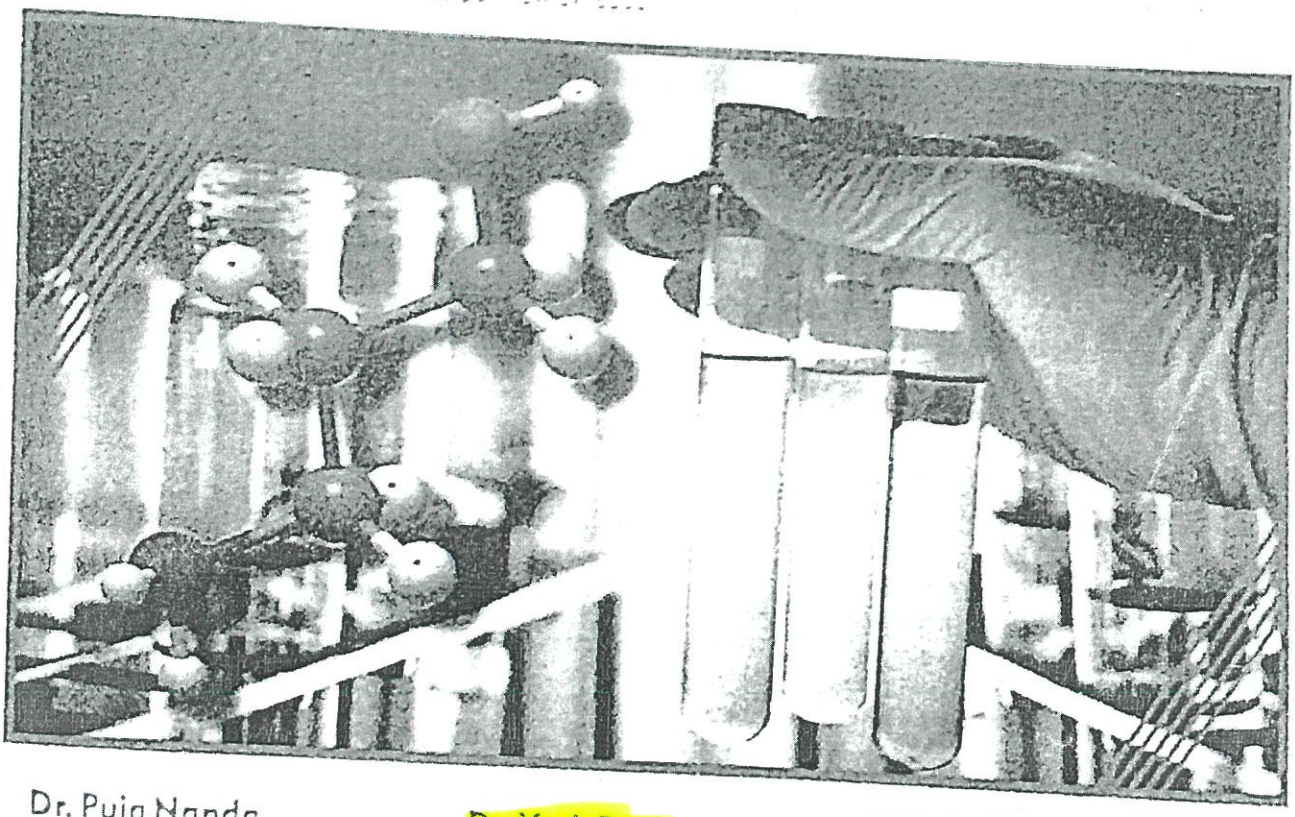
P-01

As per new Syllabus of
Course No

DINESH

Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry

For the students of B.Sc. Part
various other colleges of



Dr. Puja Nanda
M.Sc., Ph.D., NET, GATE
Dept. of Chemistry
GCW, Parade, Jammu.

Dr. Yash Paul
M.Sc., Ph.D.
Dept. of Chemistry
GCW, Parade, Jammu.

Dr. Arun Kumar
M.Sc., Ph.D., NET
Dept. of Chemistry
G.G.M. Science College, Jammu

2019

since 1982

S. DINESH & Co.

Sister Concern : S. VINESH & Co.

• JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

PRINTING HISTORY

First Edition : July, 2016
Second Edition : July, 2017
Third Edition : May, 2018
Fouth Edition (Revised) : July, 2018
Fifth Edition : June, 2019
Sixth Edition (Revised) : July, 2019

I.S.B.N. 978-93-89255-37-9

Price { ₹ 165/-

IMPORTANT NOTE

Due to huge demand of our different books, some duplicate copies of our books have been published by the duplicators. To protect you against these duplicate/counterfeit/fake books, we have put a hologram sticker on the title cover of the original/genuine books. This hologram bears our logo in the front layer and our trade mark DINESH in the second layer and when viewed at certain angles it gives multiple color effect. Readers are cautioned not to buy any such book which does not bear the said hologram. The book without this hologram may be spurious one and anyone having this book can be sued under law. Readers are requested that they shall inform the publishers about the booksellers selling duplicate books which do not bear any hologram stickers on them. In the event of this information being correct, the informer shall be richly awarded and his/her name shall also be kept confidential.

OUR ADDRESSES IN INDIA :

Jalandhar City : Near Sitla Mandir, Circular Road, Mai Hiran Gate, **Jalandhar**–144008
Ph.: (0) 0181– 4606108, 09, 11, 7710711711 website : sdineshonline.in, e-mail : sdineshandco@gmail.com

New Delhi : 4265, Gali No. 3, Mohalla Panjabian, Ansari Road, Darya Ganj, **Delhi**
Ph.: 011–23250628, 23250058, e-mail : sdineshdelhi@gmail.com

Bengaluru : No. 60, 2nd Main, 11th Cross, Vittal Nagar, **Bengaluru**
Ph.: 080–26755085 e-mail : sdineshbengaluru@rediffmail.com

Ranchi : South Samaj Street, Beside Srilok Complex, H. B. Road, Tharpakhana, **Ranchi–1**
Ph.: 0651-2211334 e-mail : sdineshandcoranchi@gmail.com

Cochin : 41/161, Ammankovil Road, Near KSRTC, **Ernakulam**–682035
Ph.: 0484-4851453 e-mail : sdineshcochin@gmail.com

DISCLAIMER

The contents in this book have been obtained from sources believed to be authentic. However, neither the Publishers nor its authors guarantee the accuracy or completeness of any information published herein. It is notified that the publishers and its authors shall not be responsible for any errors, omissions or damage arising out of the use of the information contained in the book. This book has been published with the understanding that the publisher and its authors are just supplying information and not rendering professional services. For binding mistakes, misprints or missing pages in the book, the publishers responsibility is limited to replace the book by similar edition within one month of its purchase.

Published by : S.P. JAIN, B.E., S.DINESH & Co., Near Sitla Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph. & Fax 0181-4606108, 09, 11, 7710711711

Printed at : Maanglik Printers, Unit-S Dinesh & Co., Ram Bagh, Transport Nagar, Jalandhar. Ph.: 0181–5028620

Pc 3

CONTENTS

P-4

P-5

Published Books as per new CBCS syllabus of Jammu BCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester III & IV)

Chemistry

- Dinesh Solutions, Dilute Solutions, Colligative Properties, Conductance, Electrochemistry & Electrochemical Cells (J.U. & G.C.W. Parade) — For Sem. III
- Dinesh Surface Chemistry, Colloids, Emulsions, Solutions, Phase Equilibrium, Electrochemistry & States of Matter (Cluster University) — For Sem. III
- Vinesh Chemistry Practicals (J.U. & G.C.W. Parade) — For Sem. III
- Dinesh Organic Chemistry, Natural and Medicinal Agents from Natural Sources (SEC) (Cluster Univ.) — For Sem. III
- Dinesh Coordination Chemistry, States of Matter & Chemical Kinetics (J.U. & G.C.W. Parade) — For Sem. IV
- Dinesh States of Matter, Chemical Kinetics & Coordination Chemistry (Cluster University) — For Sem. IV
- Vinesh Practicals (Physical, Inorganic & Analysis) — For Sem. IV
- Dinesh Pesticide Chemistry (SEC) (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV

Physics

- Vinesh Electricity, Thermodynamics and Statistical Mechanics (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Thermal Physics And Statistical Mechanics (Cluster University) — For Sem. III
- Vinesh Practical Physics — For Sem. III
- Vinesh Physics Workshop Skills (SEC) — For Sem. III
- Vinesh Electrical Circuits and Network Skills (SEC) (Cluster University) — For Sem. III
- Vinesh Waves and Optics — For Sem. IV
- Vinesh Practical Physics — For Sem. IV
- Vinesh Renewable Energy and Energy Harvesting (SEC) — For Sem. IV
- Vinesh Radiation Safety (SEC) (Cluster University) — For Sem. IV

Botany

- Vinesh Plant Anatomy, Embryology and Ecology (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Plant Anatomy And Embryology (Cluster University) — For Sem. III
- Vinesh Plant Anatomy And Embryology (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Nursery, Gardening and Floriculture (SEC) (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Plant Physiology and Metabolism (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV
- Dinesh Ethnobotany (SEC) (S-IV C.L.U., S-VI J.U.) — For Sem. IV
- Dinesh Biofertilizer (SEC) (S-IV J.U., S-VI C.L.U.) — For Sem. IV

Zoology

- Vinesh Physiology and Biochemistry — For Sem. III
- Vinesh Apiculture (SEC) (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Aquarium Fish Keeping (SEC) (Cluster University) — For Sem. III
- Vinesh Sericulture (SEC) (Cluster University) — For Sem. III
- Vinesh Principles of Genetics and Evolutionary Biology — For Sem. IV
- Vinesh Physical Anthropology (SEC) (Cluster University) — For Sem. IV
- Vinesh Aquarium Fish Keeping (SEC) (J.U. & G.C.W. Parade) — For Sem. IV
- Vinesh Computer Applications in Biology (SEC) (Cluster University) — For Sem. IV

since 1982

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

•JALANDHAR • DELHI • BANGALORE • COCHIN • RANCHI

An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-89255-37-9

9 789389 255379

P-6

AQMCS JAS-ANZ
ISO 9001 Registered

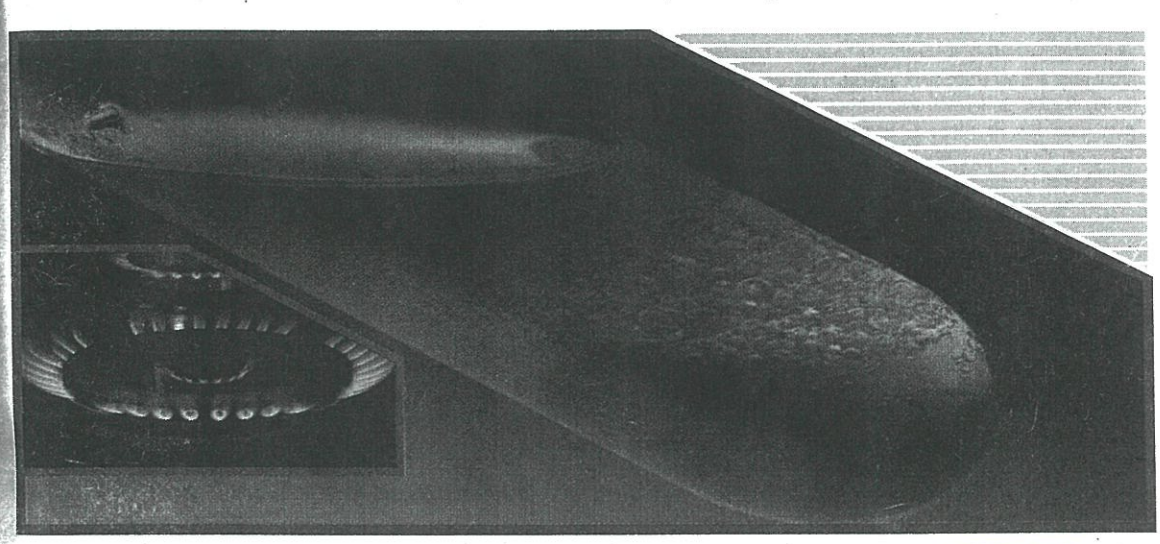
New Syllabus
Under CBCS

DINESH

Fuel Chemistry & Chemistry of Cosmetics & Perfumes

(Skill Enhancement Course)

For the students of Class B.Sc. IInd Year of H.P.U., B.Sc. Sem. II of Cluster University of Jammu and other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of chemistry
G.G.M.Sc. College, Jammu.

since 1982

Your Satisfaction is our Guarantee

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

• JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

P—7

Contents

P-8

Our Distinguished books as per new CBCS syllabus
Choice Based Credit System (CBCS)

For B.A. / B.Sc. IInd Year

BOTANY

- Dinesh Plant Anatomy & Embryology — For B.Sc. II
- Dinesh Bio-Fertilizers (Skill Enhancement Course) — For B.Sc. II
- Dinesh Plant Physiology & Metabolism — For B.Sc. II
- Dinesh Gardening and Floriculture (Skill Enhancement Course) — For B.Sc. II

CHEMISTRY

- Dinesh Solutions, Phase Equilibrium, Conductance — For B.Sc. II
- Dinesh Electrochemistry & Organic Chemistry — For B.Sc. II
- Dinesh Chemistry of Main Group Elements, Chemical Energetics and Equilibria. — For B.Sc. II
- Dinesh Basic Analytical Chemistry (SEC) — For B.Sc. II
- Dinesh Fuel Chemistry & Chemistry of Cosmetics & Perfumes (SEC) — For B.Sc. II

ZOOLOGY

- Vinesh Medical Diagnostics (SEC) — For B.Sc. II
- Vinesh Apiculture (SEC) — For B.Sc. II

PHYSICS

- Vinesh Statistical and Thermal Physics — For B.Sc. II
- Vinesh Statistical and Thermal Physics (Lab) — For B.Sc. II
- Vinesh Waves & Optics — For B.Sc. II
- Vinesh Waves & Optics (Lab) — For B.Sc. II

MATHEMATICS

- Vinesh A Text Book of Real Analysis — For B.A./B.Sc. II
- Vinesh A Text Book of Algebra — For B.A./B.Sc. II

Vinesh Excellent Series (Fully Solved) for all books in Mathematics are also available.

since 1982

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

•JALANDHAR• DELHI• BANGALORE• COCHIN• RANCHI

An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-89255-29-4

9 789389 255294

P-9

Naveen Anand

N

HELPLINE SERIES

2018

According to the Latest Syllabus of
Jammu University and GCW Parade, Jammu

TEXT BOOK OF

ORGANIC CHEMISTRY

B.Sc. (Semester–VI)

Edited by : Principal (Retd.)
Prof. K.B. ABROL

Dr. Naveen Anand Department of Chemistry, GCW Gandhi Nagar, Jammu

Prof. Raj Kumar Gupta Department of Chemistry, GGM Science College, Jammu

Dr. Deepali Mahajan Department of Chemistry, GGM Science College, Jammu

Dr. Bhavana Sharma Department of Chemistry, GCW, Parade, Jammu

Dr. Pankaj Gupta Department of Chemistry, GDC Boys, Kathua

MALHOTRA BROTHERS
Serving Education Since 1934
PACCA DANGA, JAMMU

u on the gineering thrilled to arters in ommunity enced professional forward to delivering innovative engineering solutions to its global clientele from its Jammu Centre, he added. "With its strong commitment

orandum to DC Jammu on

cussed the long pending demands and problems being faced by the farmers residing in border areas of Block Khour and Hamirpur Kone in the year 2021 but after the lapse of 22 years no rent has been paid to owners of the land. Romesh Singh Bhau, gener-

Station Kish identified fina drug traffick Mohd Iqbal Bashir Ahm

Published by :

M/s. Malhotra Brothers

Pacca Danga, Jammu

Ph. 0191–2572147

ISBN : 818829495-0

Edition : 2018

Price : ₹ 380.00

Composed by :

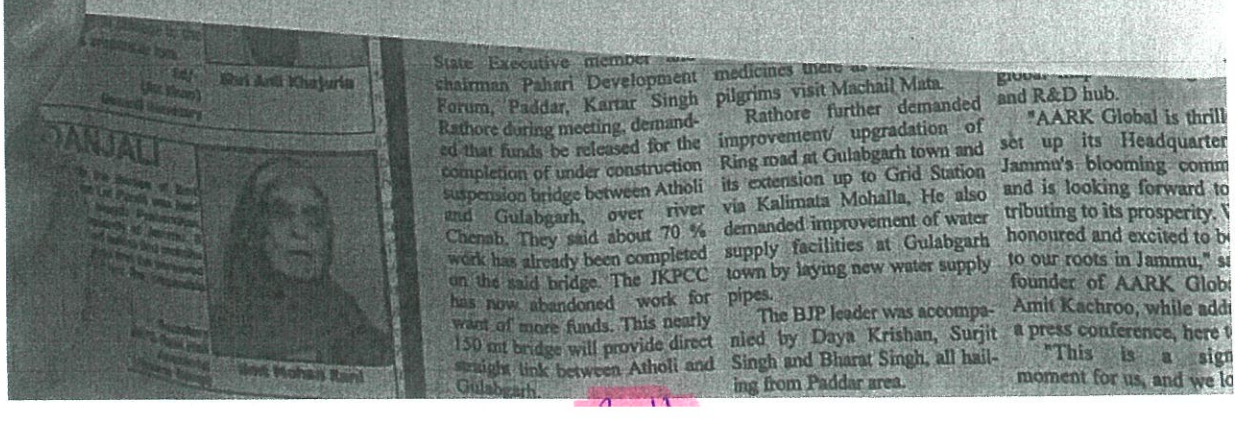
Swastik Computers

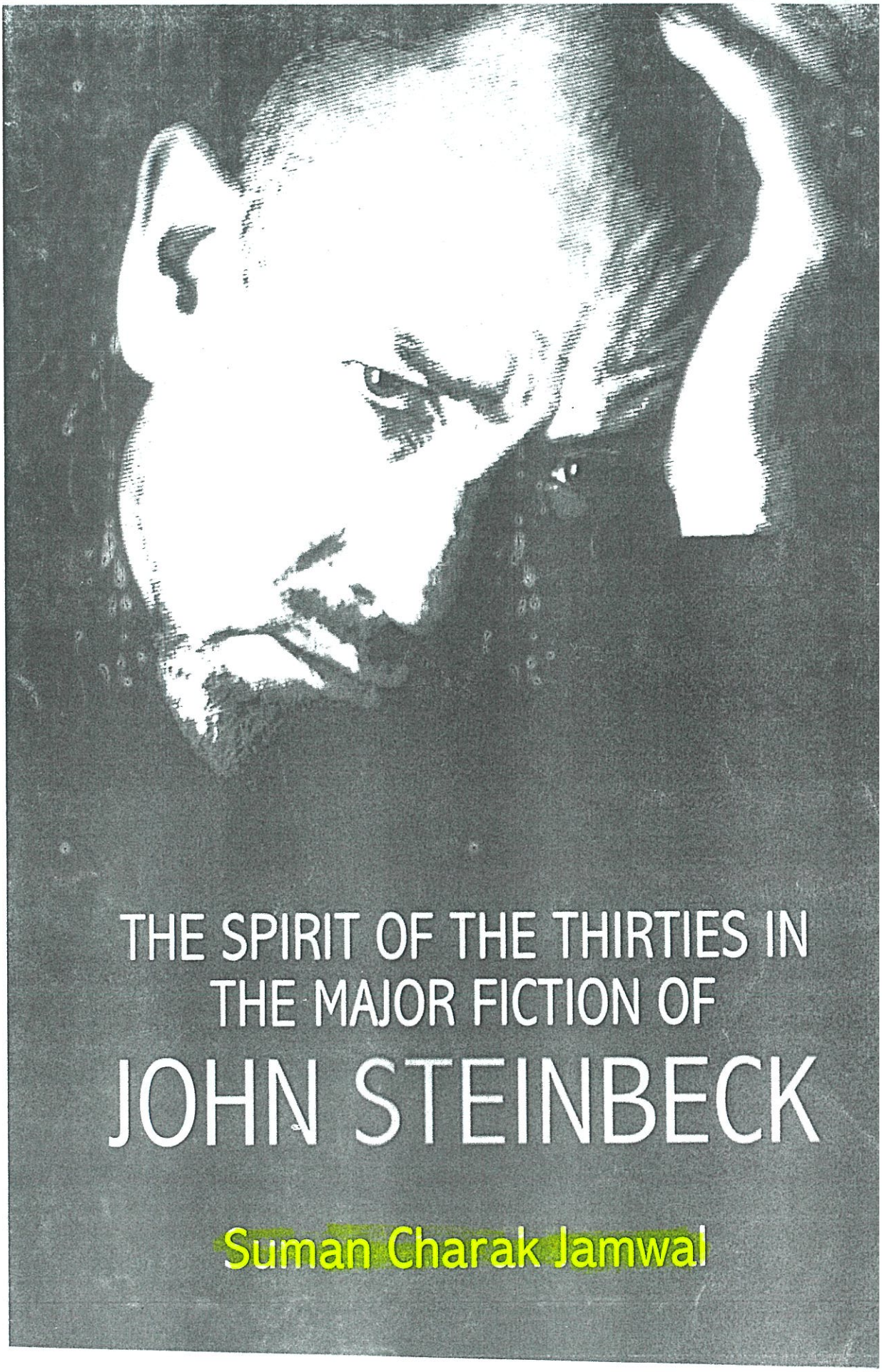
Ph. : 94191-12984

Printed at :

Combine Printers

Jalandhar City.



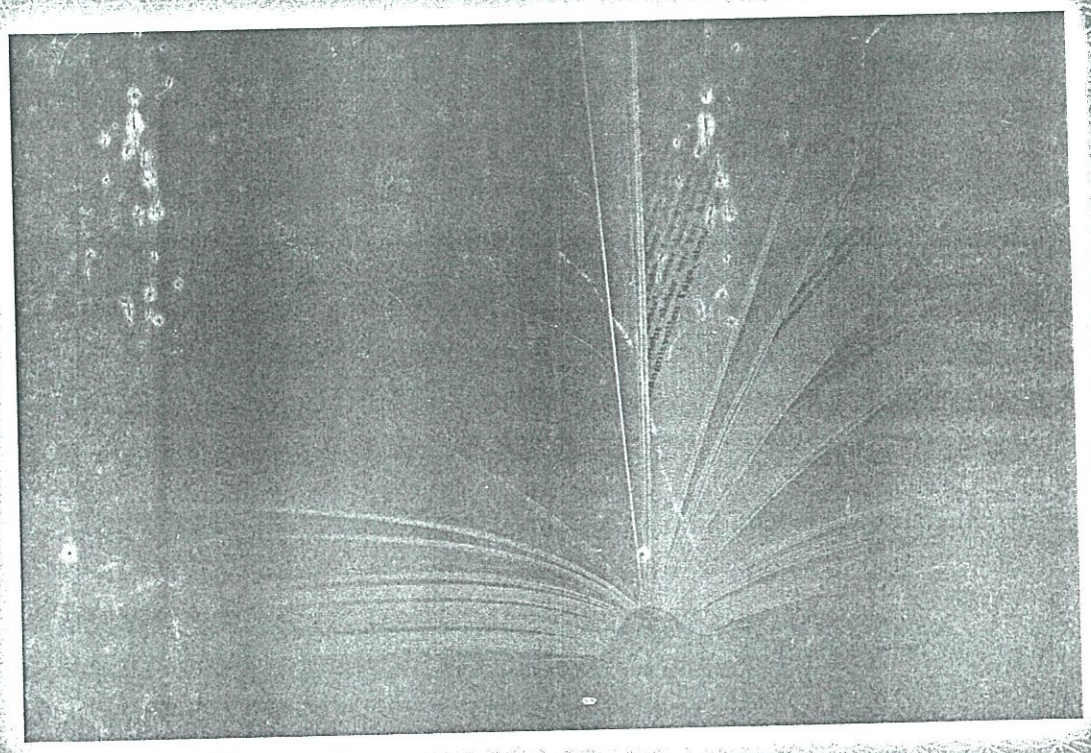


THE SPIRIT OF THE THIRTIES IN THE MAJOR FICTION OF JOHN STEINBECK

Suman Charak Jamwal

IJELLH

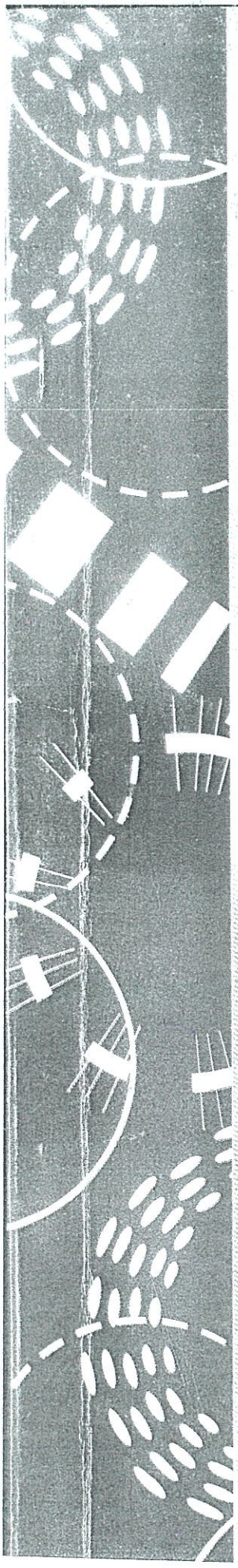
INTERNATIONAL JOURNAL OF ENGLISH LANGUAGE, LITERATURE IN HUMANITIES



Volume 6, Issue 4, April 2018

MONTHLY JOURNAL

An international platform for researchers



ISSN 0975-4091

Pragati's English Journal

Vol. 18 No. 2 Dec. 2018

Editor : Dr. N K Neb

Pragati Educational Council (Regd.)
Jalandhar

P-14

MAPPING CANADIAN LITERATURE

& SOCIAL SCIENCES

THE HINDU

Indian Diaspora in North America

In the past few decades, the visible minority population in Canada has grown considerably. Currently there are about four million people who are of diasporic origin. More than one million of these are from South Asia. Toronto has the highest concentration of immigrants, making it the most diverse multicultural

Mistry's *Family Mat*

s the best-known Indian-Canadian n
inction of winning Commonwealth
uch a Long Journey. His late novel *F*

tempor

et Atwo

cribed

THE HINDUSTAN TIMES

Booker Prize for Margaret Atwood

Eminent Canadian writer Margaret Atwood is the winner of the Booker Prize this year. It is heartening to note that contemporary Canadian writing has achieved a remarkable growth. Margaret Atwood and Margaret Laurence are now international writers, prescribed in various universities all over the world.

S. RAMASWAMY

Commentaries on

CANADIAN LITERATURE

Canadian Bi-Culturalism
Canadian Drama & Theatre
Canadian Prairie Experience
Canadian Humour & Satire

Margaret Atwood Rana Bose

April, 2006 New Delhi

Family Matters

Indian-Canadian novelist.
ing Commonwealth Fiction
ruey. His latest novel *Family*
ved in literary circles.

Queer Studies

Lesbianism and Academic Curriculum

Queer Studies has emerged as an important area of study in North America. There has been a strong movement to grant more rights to the lesbians and homo

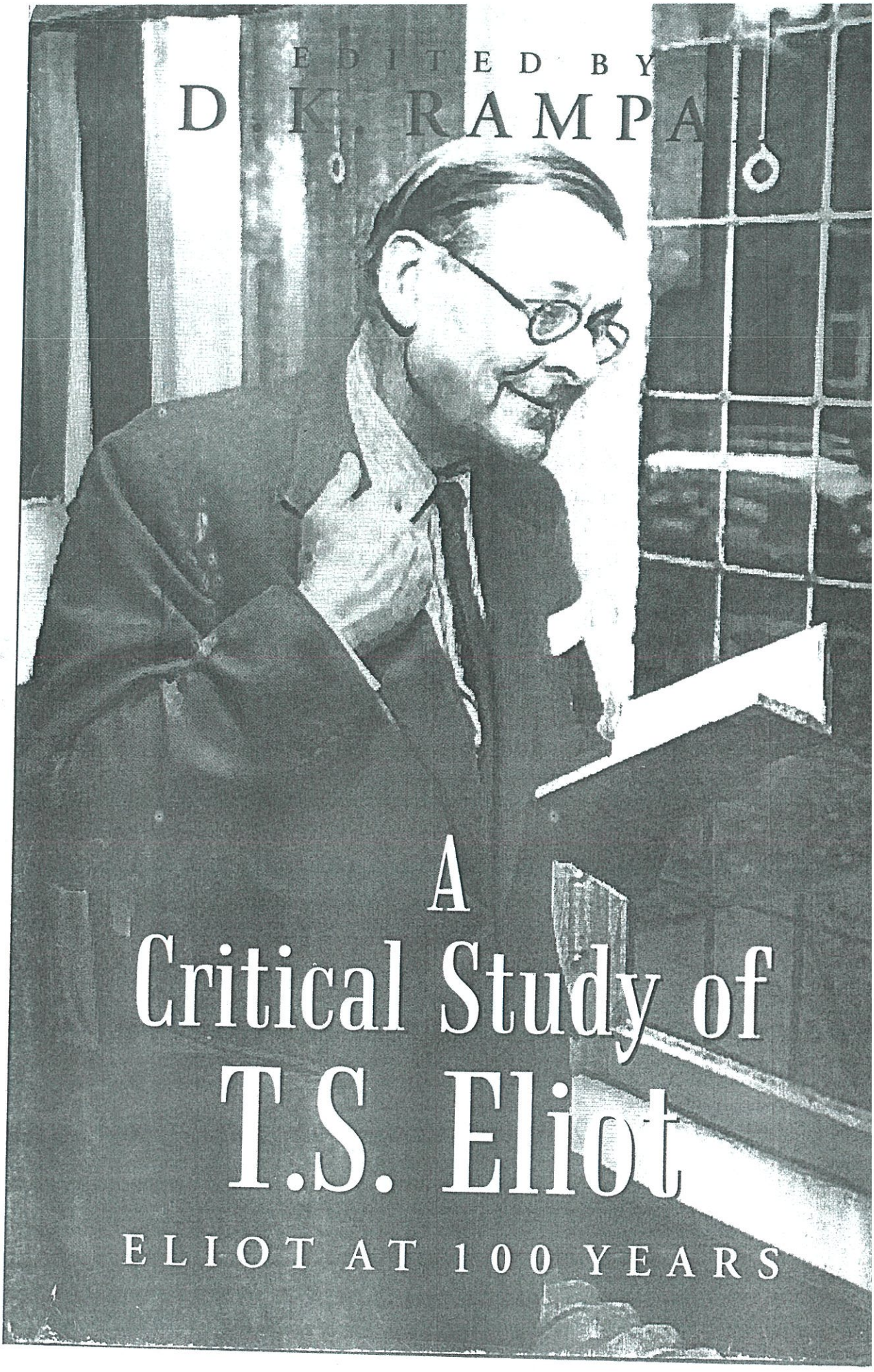
Edited by

R.K. DHAWAN & D.K. PABBY

P-15

EDITED BY

D. K. RAMPAL



A Critical Study of T.S. Eliot

ELIOT AT 100 YEARS

Book | © 2019

Genetic Enhancement of Crops for Tolerance to Abiotic Stress: Mechanisms and Approaches, Vol. I

Editors: Vijay Rani Rajpal, Deepmala Sehgal, Avinash Kumar, S.N. Raina

Provides up to date comprehensive information on the key biological determinants of plant abiotic stresses with an emphasis on modern crop improvement strategies

Is unique to combine the responses triggered in plants by various abiotic stresses, stress resistance mechanisms, changes in gene expression, regulation of stress tolerance mechanisms, generation of genomic resources and their utilizaion for QTL and association mapping, marker assisted and genomic selection, among others, for developing abiotic stress-tolerant crop varieties

P-17

Chapters written by world authorities of their subject

No competitive book available in this format

Part of the book series: Sustainable Development and Biodiversity (SDEB, volume 20)

Sections

Table of contents (12 chapters)

Search within book

Book Title
Genetic Enhancement of Crops for Tolerance to Abiotic Stress: Mechanisms and Approaches, Vol. I

Editors
Vijay Rani Rajpal, Deepmala Sehgal, Avinash Kumar, S.N. Raina

Series Title
Sustainable Development and Biodiversity

DOI
https://doi.org/10.1007/978-3-319-91956-0

Publisher
Springer Cham

eBook Packages
Biomedical and Life Sciences, Biomedical and Life Sciences (R0)

Hardcover ISBN
978 3 319 91955-3
Published: 08 May 2019

eBook ISBN
978 3 319 91956-0
Published: 24 April 2019

Series ISSN
2352-474X

Series E-ISSN
2352-4758

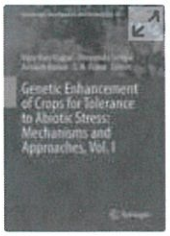
Edition Number
1

Number of Pages
XIII, 268

Number of Illustrations
7 b/w illustrations, 27 illustrations in colour

Topics
Plant Genetics and Genomics, Plant Breeding/Biotechnology, Agriculture, Biotechnology, Evolutionary Biology

Back to top ↑



Genetic Enhancement of Crops for Tolerance to Abiotic Stress: Mechanisms and Approaches, Vol. I pp 53 72

Epigenetic Response of Plants to Abiotic Stress: Nature, Consequences and Applications in Breeding

Manoj K. Dhar, Rahul Sharma, Parivartan Vishal & Sanjana Kaul

Chapter | First Online: 24 April 2019

613 Accesses | **1** Citations

Part of the Sustainable Development and Biodiversity book series (SDEB,volume 20)

Abstract

Stress is inevitable in the life cycle of living organisms, including plants. Being sessile, plants are more prone to the deleterious effects of environmental stress . Therefore, plants have developed complex mechanisms to survive under

these challenging conditions. Tolerance , avoidance, and resistance are the three major strategies followed by plants to counter the recurring biotic and abiotic stresses . These mechanisms involve genes associated with several interconnected pathways, which lead them towards better stress tolerance . Plants resort to various modifications in their morphological traits, physiology, and so forth in response to stress. Modulations in various regulatory mechanisms, including epigenetic modifications, play a pivotal role in developing stress tolerance in plants. These involve changes in either the plant homeostasis or heritable changes in gene expression pattern. The trans-generational changes are brought about, more often, by dynamic changes in epigenetic marks rather than development of stress resistant alleles via gene mutation. A large number of stress resistant transgenics have been developed over the years all over the world. However, the traditional breeding has remained indispensable. Much emphasis has been laid on identification and characterization of stress resistance genes and developing transgenic crop varieties, while the epigenomic aspects have been given less importance. The present chapter focuses on the essential components of epigenetic machinery, different epigenetic alterations involved in conversion of active euchromatin to silent heterochromatin and vice versa during stress, and integration of epigenetic data with breeding

0-21

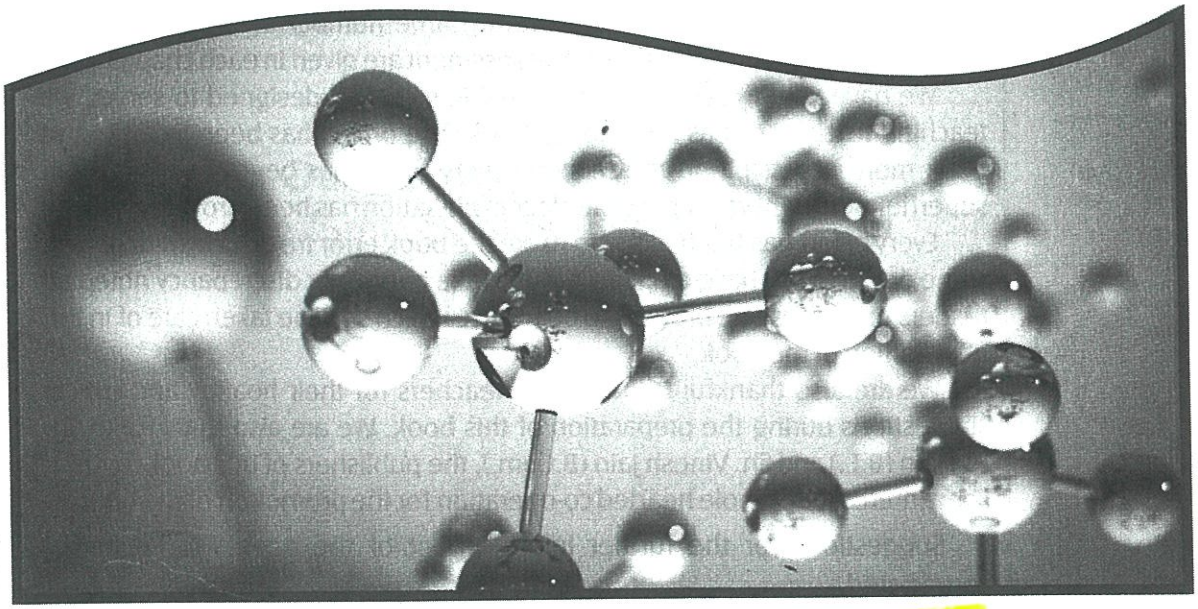
AQMCS JAS-ANZ
ISO 9001 Registered

New Syllabus
Jammu University & GCW, Parade
Course No : UCHTE601

JMD
DINESH

Inorganic Materials of Industrial Importance & Organic Spectroscopy

For the students of Class B.Sc. (Sem. VI) of Jammu University, GCW, Parade and various other Indian Universities as per new syllabus.



Dr. Puja Nanda
M.Sc., Ph.D., NET, GATE
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Dept. of Chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Dept. of Chemistry
G.G.M. Science College, Jammu.

2020
since 1982
Price ₹ 190/-
S. DINESH & Co.
Sister Concern : S. VINESH & Co.
•JALANDHAR• DELHI• BENGALURU• COCHIN• RANCHI

₹-22

Contents

P-23

P-22

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester I to VI)

Chemistry

- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (J.U. & G.C.W. Parade) — For Sem. I
- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Cluster University) — For Sem. I
- Vinesh Practical Chemistry (J.U., CLU & G.C.W. Parade) — For Sem. I
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. II
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (Cluster University) — For Sem. II
- Vinesh Practical Chemistry (J.U., CLU & G.C.W. Parade) — For Sem. II
- Dinesh Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. III
- Dinesh Functional Group Organic Chemistry-IV, Solutions, Phase Equilibrium, Electrochemistry & States of Matter-I (Cluster University) — For Sem. III
- Dinesh Cosmetics, Perfumes and Medicinal Agents from Natural Sources (Skill Enhancement Course) — For Sem. III
- Vinesh Practical Chemistry (J.U., CLU & G.C.W. Parade) — For Sem. III
- Dinesh Coordination Chemistry, States of Matter & Chemical Kinetics (J.U. & GCW Parade) — For Sem. IV
- Dinesh States of Matter-II, Chemical Kinetics & Coordination Chemistry (CLU) — For Sem. IV
- Dinesh Pesticide Chemistry (Skill Enhancement Course) — For Sem. IV
- Vinesh Practical Chemistry (J.U., CLU & G.C.W. Parade) — For Sem. IV
- Dinesh Spectroscopy, Photochemistry and Organo Metallics and Bioinorganic Chemistry (J.U. & G.C.W. Parade) — For Sem. V
- Dinesh Fuel Chemistry (Skill Enhancement Course) — For Sem. V
- Vinesh Practical Chemistry (J.U., CLU & G.C.W. Parade) — For Sem. V
- Dinesh Inorganic Materials of Industrial Importance & Organic Spectroscopy (J.U. & G.C.W. Parade) — For Sem. VI
- Vinesh Practical Chemistry (J.U., CLU & G.C.W. Parade) — For Sem. VI

since 1982

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

•JALANDHAR • DELHI • BANGALORE • COCHIN • RANCHI

An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-89899-05-4

9 789389 899054

P-24

P-24

AQMCS JAS-ANZ
ISO 9001 Registered

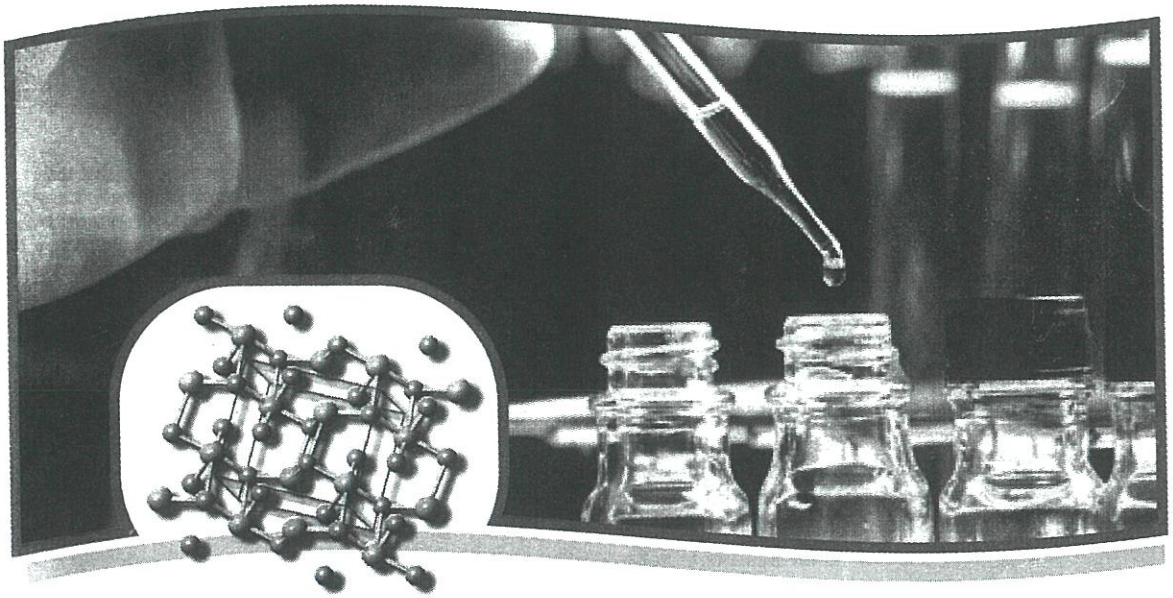
As per new CBCS Syllabus of
Cluster University of Jammu

JMD
DINESH

A TEXT BOOK OF

CHEMICAL ENERGETICS, EQUILIBRIA & FUNCTIONAL ORGANIC CHEMISTRY

For the students of Class B.Sc. (Sem. II) of Cluster University of Jammu and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
G.G.M. Science College, Jammu.

Dr. Puja Nanda
M.Sc., Ph.D., NET, GATE
Deptt. of Chemistry
GCW, Parade, Jammu.

2019

since 1982

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

•JALANDHAR• DELHI• BENGALURU• COCHIN• RANCHI

P-25

Contents

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester I & II)

Chemistry

- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (J.U. & G.C.W. Parade) — For Sem. I
- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Cluster University) — For Sem. I
- Vinesh Practical Chemistry — For Sem. I
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. II
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (Cluster University) — For Sem. II
- Vinesh Practical Chemistry — For Sem. II

Physics

- Vinesh Mechanics, Oscillations & Relativity — For Sem. I
- Vinesh Practical Physics — For Sem. I
- Vinesh Vector Calculus, Electrostatics and Electromagnetic Waves (J.U. & G.C.W. Parade) — For Sem. II
- Vinesh Electricity and Magnetism (Cluster University) — For Sem. II
- Vinesh Practical Physics — For Sem. II

Botany

- Vinesh Diversity of Microbes & Cryptogams (J.U. & G.C.W. Parade) — For Sem. I
- Vinesh Diversity in Microbes, Algae, Fungi and Archegoniates (Cluster University) — For Sem. I
- Dinesh Characteristics and Systematics of seed plants (J.U. & G.C.W. Parade) — For Sem. II
- Vinesh Gymnosperms, Taxonomy & Plant Ecology (Cluster University) — For Sem. II

Zoology

- Vinesh Animal Diversity — For Sem. I
- Vinesh Comparative Anatomy and Developmental Biology of Vertebrates — For Sem. II

Mathematics

- Vinesh Differential Calculus — For Sem. I
- Vinesh Differential Equations — For Sem. II

Vinesh Excellent Series (Fully Solved) for all books in Mathematics are also available.

since 1982

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

•JALANDHAR • DELHI • BANGALORE • COCHIN • RANCHI

An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-88663-11-3

978-93-88663-11-3

P-27

P-27

Kiran Kalra

Diasporic Writings

Narratives across Space and Time

Neena Gupta Vij
Raj Gaurav Verma

VALUE
PUBLICATIONS

P-28

Contents

P-31

Chapter 11

Dichotomy of Literary Encounter
A Comparative Study of Indo-Canadian Diasporic Writings

Kiran Kalra

We live in an age of globalization which can be most appropriately described by the phrase "floating the borders." E. M. Forster's "Only Connect" seems to be the 'mool mantra' or the defining principle of this age. We undoubtedly feel proud to call ourselves citizens of this 'one world' in which the distances are diluting, everybody is extending his/her hand to reach out to the other and where apparently, one can claim that at last, the 'meeting of streams' is taking place.

Globalization has led to large scale migrations from Africa, the Caribbean and the Asian Subcontinent to Europe. While international migration is considered to be a healthy trend, and is believed to have shaped the multi-cultural societies of the world like that of Canada, it is also responsible for creating a sense of "alienation" and "marginalization" among a section of migrants. This new phenomenon of globalization has brought forth new aspects of life and thus has introduced new areas in the study of art, literature and culture. In fact, it has paved the way for the growth of new genres in the field of art and literature. As a result of these large-scale immigrations, 'expatriation' has emerged as a literary phenomenon of immense importance in this century.

Chapter 11

Dichotomy of Literary Encounter
A Comparative Study of Indo-Canadian Diasporic Writings

Kiran Kalra

We live in an age of globalization which can be most appropriately described by the phrase "floating the borders." E. M. Forster's "Only Connect" seems to be the 'mool mantra' or the defining principle of this age. We undoubtedly feel proud to call ourselves citizens of this 'one world' in which the distances are diluting, everybody is extending his/her hand to reach out to the other and where apparently, one can claim that at last, the 'meeting of streams' is taking place.

Globalization has led to large scale migrations from Africa, the Caribbean and the Asian Subcontinent to Europe. While international migration is considered to be a healthy trend, and is believed to have shaped the multi-cultural societies of the world like that of Canada, it is also responsible for creating a sense of "alienation" and "marginalization" among a section of migrants. This new phenomenon of globalization has brought forth new aspects of life and thus has introduced new areas in the study of art, literature and culture. In fact, it has paved the way for the growth of new genres in the field of art and literature. As a result of these large-scale immigrations, 'expatriation' has emerged as a literary phenomenon of immense importance in this century.

The human story begins in the land of their adoption, where an immigrant has to face many difficulties. "The South Asian migration to Canada has established a diaspora whose immediate need was to articulate its feelings, emotions and responses to the new society.... Writers like M.G. Vassanji, Rohinton Mistry, Neil Bissoondath, Uma Parmeswaram, Himani Bannerjee, and others have, through their literature projected the dilemmas and the struggles of the South Asian Diaspora, thereby giving their ethnic existence a 'voice'" (Narula 14). The first problem that an immigrant in Canada comes face to face is adjusting to its difficult landscape. Canada is a country which faces extreme climatic conditions: six months of extreme winters are followed by six months of shedding. The Canadian wilderness with its vast tracts of snow, endless prairies and innumerable lakes make a great impact on the lives of Canadian people (Prabhavathy 69). Apart from the hostile weather conditions and challenge of cultural assimilation, another problem that a South Asian, in particular, has to face in Canada, is that of racism. The humiliation of racism that one has to go through is very suggestively reflected in these lines by Lakshmi Gill:

> Blue ice
> (O my Canada)
> can I call
> you mine
> foreign sad
> brown that I
> am.
> (Gill 6)

This paper proposes to underline the dichotomy confronted by an emigrant writer who is caught helplessly in the labyrinth caused by the country of original homeland and the country of adoption and it attempts to study the new contexts in comparative literary studies contributed by the diasporic writers. Writers like M.G. Vassanji, Rohinton Mistry, Uma Parmeswaram, Bharti Mukherjee and many others, have added new concepts to the traditional understanding of literature, its conventions and boundaries.

P-34

Diasporic writing has emerged as a new literary trend and the diasporic literature of the Indian subcontinent is now receiving huge international fame and recognition. Diasporic writers have introduced new themes and diverse techniques in their works. Their literature indulges in nostalgia and at the same time assimilates with the new place and people. In the case of the immigrants in a new land, the longing for the homeland is countered by the desire to belong to the new home, so the migrant remains a creature of the edge, or in the words of Rushdie, "the peripheral man" (Singh). This 'peripheral man' can be seen as the central character in almost all of the writings of the diaspora. Mr. Biswas in V.S. Naipaul's *A House for Mr. Biswas* is a perfect example of the typical "diasporean hero." Instead of considering expatriation as a painful experience in alienation and isolation, South Asian diasporic writers are coming up with their varied and diverse responses to the experience of migration. A sense of rootlessness, homelessness, marginalization, identity crisis and yearning for the homeland are undoubtedly some of the most important and common themes in their literature but they offer a varied variety in their treatment of these themes. Where Naipaul's protagonist constantly struggles to own a house, a piece of land, which can give him an identity of his own in the land of his adoption, in Vassanji's *The Gunny Sack*, a gunnysack acts as a metaphor for the past and the ancestral lineage, which incidentally is of no importance for anyone in the next generation, except the protagonist Kala willingly agrees to carry it. Another peculiar feature of diasporic writings is that one finds a curious attachment of the author to the traditions, religions and languages of his country of origin. In their own different ways, these writers try to recreate their homelands in their writings through memory, nostalgia and imagination.

M.G. Vassanji is one of the most prominent voices of the 'hyphenated-Canadians', the immigrant minorities in Canada. In his novels like *The Gunny Sack* and *The Book of Secrets* he examines the issues regarding identity, displacement and race relations. Vassanji's novel *The Assassin's Song* is of great interest to the Comparatists because in this novel he brings in various

p-35

elements of traditional influences, intertextuality and has made many cross references. The narrative of *The Assassin's Song* is embedded with cultural inheritance of the place of origin of both, the author as well as the narrator, which is Gujarat in India. The author depicts diverse harmonies through literary and cultural influences. In the thematic treatment on the one hand, intensions of the migration and border crossing are described while on the other hand we read about the cultural confluences which come to the fore through the mythology of the Pirbaag shrine.

Rohinton Mistry, on the other hand, is a Parsi-Indo-Canadian diasporic writer whose works explore the everyday lives of *Parsis* living in Bombay, India. According to T.M. Luhrmann, the Parsis were influential during the British Raj. They viewed the issue of independence with mixed feelings since many of them identified with Western culture. There was regret for the passing of an old way of life (during the Raj) and they linked their changed social fortunes to the departure of the British (14). This theme is interspersed throughout the stories of Rohinton Mistry. Mistry's *Such a Long Journey* narrativizes the pressures and tensions of a minority community struggling for its existence. Mistry's *A Fine Balance* is set during the Emergency period in India and exposes the social and political imbalance during Indira Gandhi's regime. Though India is a multicultural and multilingual country and its constitution guarantees equal rights to all its citizens, yet people are discriminated on the basis of caste, class and gender. Mistry portrays his protagonists as victims of caste inequalities, class struggle and gender discrimination. *A Fine Balance* is an intricate interweaving of the stories of Dina Dalal, a Parsi widow who bravely strives for a free and independent existence; young Meneck Kohlah who grapples with problems of existence and the Chamaar-turned-tailors Ishwar and Omprakash. In *A Fine Balance* Mistry presents a realistic account of the life of India in late 1990's. It was this increasing alienation with post-Independence India that led Mistry to migrate to Canada.

Both Mistry and Vassanji deal with the lives of immigrant minority communities. Their keen observations enable them to

P-32

capture the fears and frustrations of immigrants, the trepidation of the racist attacks on them and they do not forget to take into account the hostile conditions that make their lives miserable and survival difficult. It has been observed that:

> Wherever an immigrant arrives, whether Dar-es-Salaam or Toronto, whether East Africa or Canada, he is always eyed with suspicion, he is an outsider, and he has to start afresh every time, adapting to the changing contexts to be able to survive. He may carry his culture and history with him, but he has to forge a new identity that is a composite of his earlier identity and the new socio-cultural identity that is required of him. (Narula 54-55)

In Vassanji's *No New Land*, the protagonist Nurdin Lalani, whose ancestors had migrated from India to East Africa, had to undergo a second migration from Africa to Canada due to the African Nationalist policies. Apart from the hostile weather conditions of Canada, he finds difficulty in finding a house for himself. But nevertheless, he manages to find a house in the comfort zone of Don Mills where members of his Shamsi community lived. His feeling of dislocation and alienation gets further accentuated by his joblessness. He is troubled by the fact that he is not the sole bread earner of the family, infact; it is his wife Zera who is running the family. Therefore, he takes up whatever odd job comes his way. He realizes that he was harboring lusty thoughts. He even tries eating pig but is soon overpowered by a deep sense of guilt: "Eat pig and become a beast" (127). He could make out that he was coming down in his self-esteem and expectation as he starts feeling the 'tremors of change inside him' (84). Nurdin puts the blame for these changes in him on "the Canadian air" (136).

Nobel Gustad, the protagonist of Mistry's *Such a Long Journey* on the other hand, was sad and angry because of his son's betrayal when he refused to become a doctor. Another reason for his bitterness was the betrayal from his best friend Major Jimmy Billmoria, who lives in Khodadad building. Bilmoria had disappeared one morning without any information. Later Gustad comes to know that he had gone to join RAW, a wing of Indian Intelligence Service. Due to this sudden disappearance of his friend, Gustad starts doubting their

friendship. "...What happened to the great friend Jimmy Bilimoria? Our Major uncle? Where is he now, who used to come here all the time? Who I treated like brother? Gone! Disappeared! Without saying a word to us. That's friendship. Worthless and meaningless!" (49)

An important reason for isolation and marginalization of immigrants by the host society is that the immigrants neglect the importance of cultural exchange. The *Shamsi* community inside the Don Mills created a system of their own, following their own traditional values and practices. Nurdin could only find himself wavering between the statue of Goddess Laxmi in the building (symbolizing Indian tradition and Customs) and the huge jobbing in the sky building of CN Tower (symbolizing modern values). In the close tight world of Don Mills, Nurdin's fellow migrants attempts to forget their past and forge their identities which becomes evident in Toronto's Dar immigrant gatherings, where it was considered uncouth to recall their previous life.

The world of Khodadad Building was also an insular one, "an island like space" and "a microcosm of the Parsi community in India." Genetsch writes, "[t]he compound [...] is a space where Gustad can derive meaning from practicing his religion in comfortable seclusion" (153). Genetsch also notes, focusing on home, "With the exception of burial, marriage and initiation rites, the majority of rituals to be celebrated can be celebrated at home. The most important ritual in Zoroastrianism is 'kusti', a prayer in the course of which the threads of a praying belt ('kusti') are tied and untied in a special order" (143). The self-imposed isolation of this place is emphasized by the black paper that has covered the windows of Gustad's house since the war with China in 1962. Though the black paper was used as a possible means of protection during blackout warnings against enemy's air strikes but eventually it becomes a trope which extends to his interior psychic universe. Gustad's wife, Dilnavaz, remarks, "With the black paper everywhere, even starlight and moonlight is blocked out" (64). In Genetsch's view: For Gustad [...] the paper is a mechanism of defence holding chaos, i.e. an erosion of meaning, at bay. The everyday reality of 1971,

P-38

together with the psychological reality of his traumas, is unpleasant and threatening for the protagonist of Mistry's first novel. Both have the power to unsettle the microcosm of his world (152).

Ironically it is an immigrant/exile always who is expected to assimilate in the new culture and we forget that the culture should also be accommodating enough to assimilate him. In Nurdin's case "Not only does Nurdin fail to accommodate to Canada, Canada also fails to accommodate Nurdin" (Genetsch 31). Just as immigrants consider the new environment of the adopted country to be a threat to their cultural identities and show reluctance in assimilation, similarly their existence, also, according to Cohen, "represent a threat to the nation-state and the liberal-democratic order" (192).Vijay Mishra, following Zizek's examination of the nation as a Thing to be enjoyed by a given community or race (Zizek1993), suggests that "the way of life" of the dominant community is seen to come under threat by the other (multicultural community, diaspora)since the latter has ways of enjoying the Nation that do not necessarily complement the nation's enjoyment of itself. If the enjoyment of the Nation Thing is the property of a specific community, then the "Other" is always seen as someone who wishes to "steal (the nation's) enjoyment" (Zizek 203). This, according to Mishra leads to the exclusion of the diaspora from the national imaginary and further leads to racism. Nurdin, also, faces racism in the novel when a white girl accuses him of rape. This act of racism can also be viewed in the light of Edward Said's *Orientalism* which critiques the misrepresentation of the Orient as a mystic place of exoticism, moral laxity and sexual degeneracy in the Western discourse.

In his novels, Vassanji makes an intensive study of India—its culture, its traditions, its folklores, its beliefs and practices, its people and their dreams and aspirations. But above all they are novels about the experience of diaspora, of their protagonists as well as of the author. Through the narrative of the novels, one can see the yearning of the author, if not to return, but to understand and appreciate his homeland (where he hasn't been living since his family were migrants in Africa). Immigrants to

P - 39

a new land always find it difficult to break their bonds with the homeland and, as a result, they always have a yearning to return. The experiences and feelings of immigrants can be best summed up by these lines:

> We
> the migratory birds
> are here this season
> thinking
> we'll fly back to our home
> for sure. (Kalsey 37)

On the other hand, Mistry's representation of India is that of an insider. For him India is not the country of his dreams. He has to face the harsh realities of Indian caste system which does not easily accept people belonging to lower castes. In India one can aspire to move up the social ladder of class but it is impossible to break the shackles of caste system. Though belonging to the Parsi community, he and his protagonists are privileged in the sense that they are not caught in the vicious web of caste system but that also means that they do not belong to the place and are always considered as outsiders. To add to their woes their homeland no longer exists and there is no place where they can hope to return one day.

The homeland that both wish to reclaim through their writings is the same yet different, the "imaginary homeland" of Vassanji is more pure and ideal than Mistry's whose close connection with India creates a love-hate, bitter-sweet relationship.

Works Cited

Genetsch, Martin. *The Texture of Identity: The Fiction of MG Vassanji, Neil and Rohinton Mistry*. TSAR Publications, 2007.

Gill, Lakshmi. "Song." *First Clearing (An immigrant's tour of life) Poems*. Estaniel Press, 1972.

Kalsey, Surjeet. *Speaking To the Winds*. Third Eye, 1982.

Luhrmann. T. M. *The Good Parsi: The Fate of a Colonial Elite in a Postcolonial Society*. Harvard University Press, 1996.

M. G. Vassanji. *The Gunny Sack: A Novel*. Anchor, 2005.

——. *No New Land*. McClelland and Stewart, 1991
——. *The Assassin's Song*. Penguin Viking, 2007.
Mishra, Vijay. "Diasporas and the Art of Impossible Mourning." *In Diaspora: Theories, Histories, Texts*, edited by MakarandParanjape, Indialog Publications, 2001.
Mistry, Rohinton. *Such a Long Journey*. Vintage Books, 1992.
——. *A Fine Balance*. McClelland & Stewart, 1995.
Narula, Devika Khanna. "Introduction: The South Asian Diaspora in English Canadian Fiction." *South Asian Diaspora*. Creative Books, 2003.
Said, Edward W. *Orientalism*. Pantheon Books, 1978.
Singh, Shaleen. "Diaspora Literature –A Testimony of Realism." www.ezinearticles.com/Diapora Literature—A-Testimony-of-Realism
Zizek, Slavoj. *Tarrying with the Negative: Kant, Hegel and the Critique of Ideology*. Duke University Press, 1993.

P-41

VALUE
PUBLICATIONS
B-7, Saraswati Complex, Subhash Chowk,
Laxmi Nagar, New Delhi 110 092
Phone: 9212235385, 9868035385
E-mail: valuepublications2018@gmail.com

₹ 795

ISBN 978-81-944581-7-3

P-42

DIASPORIC WRITINGS

NARRATIVES ACROSS SPACE AND TIME

Editors

Neena Gupta Vij

Raj Gaurav Verma

P-43

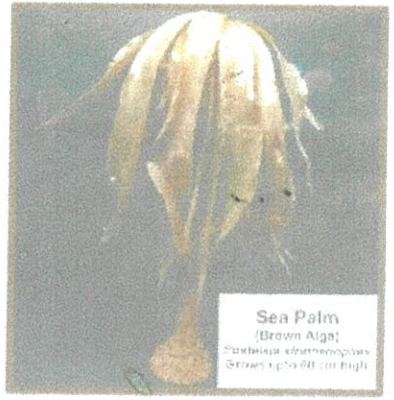
About the Authors

Dr. Bharti Razdan Kampasi

She retired as Associate Professor in Botany in January 2020 from the Higher Education Department. She qualified her M.Sc. and M.Phil. in Botany from Kashmir University in 1980 and 1982 respectively. She worked on Cytomorphology of Ferns of Kashmir under the guidance of Prof. P. Kachroo and Prof. S.S. Bir and was awarded with Ph.D degree by Kashmir University in 1986.

Sania Hamid

She is Assistant Professor in Botany, J&K Higher Education Department, presently posted in Govt. PG College for Women Gandhi Nagar, Cluster University of Jammu. She has teaching experience of 13 years at undergraduate level. She was awarded a gold medal for qualifying M.Sc. Botany in 2004 by University of Jammu. She also qualified CSIR UGC NET JRF in 2006.



S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
-JALANDHAR-DELHI-BANGALORE-COCHIN-RANCHI
An ISO 9001 : 2015 Certified Company

I.S.B.N. No 978-93-89800-13-5

VINESH

Practical Botany [MICROBES AND CRYPTOGAMS] B.Sc. (Semester-I)

Based on the syllabi of Undergraduate courses taught at Colleges and Universities of Jammu

VINESH

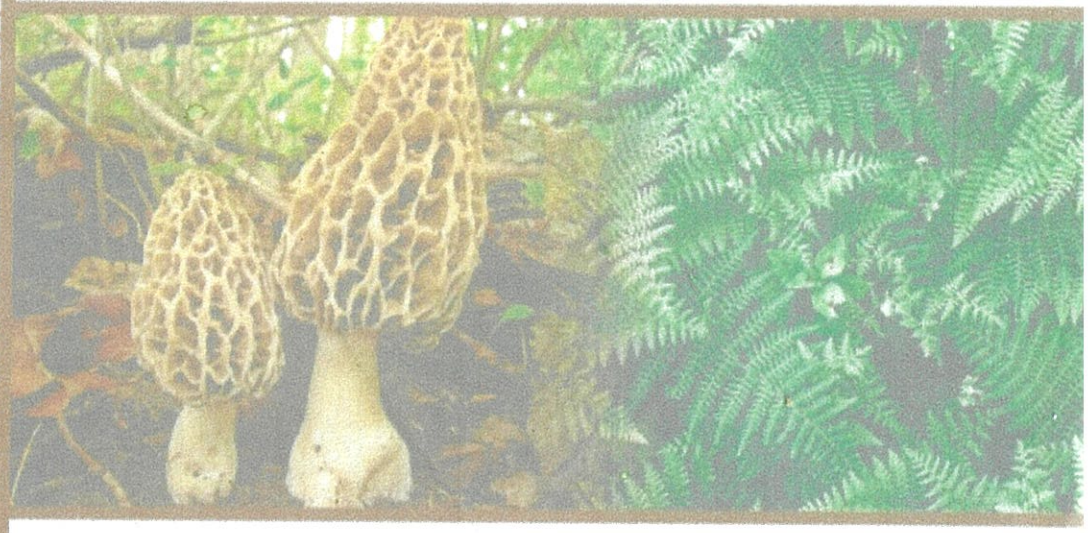
Practical Botany

(Microbes and Cryptogams)

B.Sc. (Semester I)

Dr. Bharti Razdan Kampasi

Sania Hamid



2019-20

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982

Dr. Anju Koul

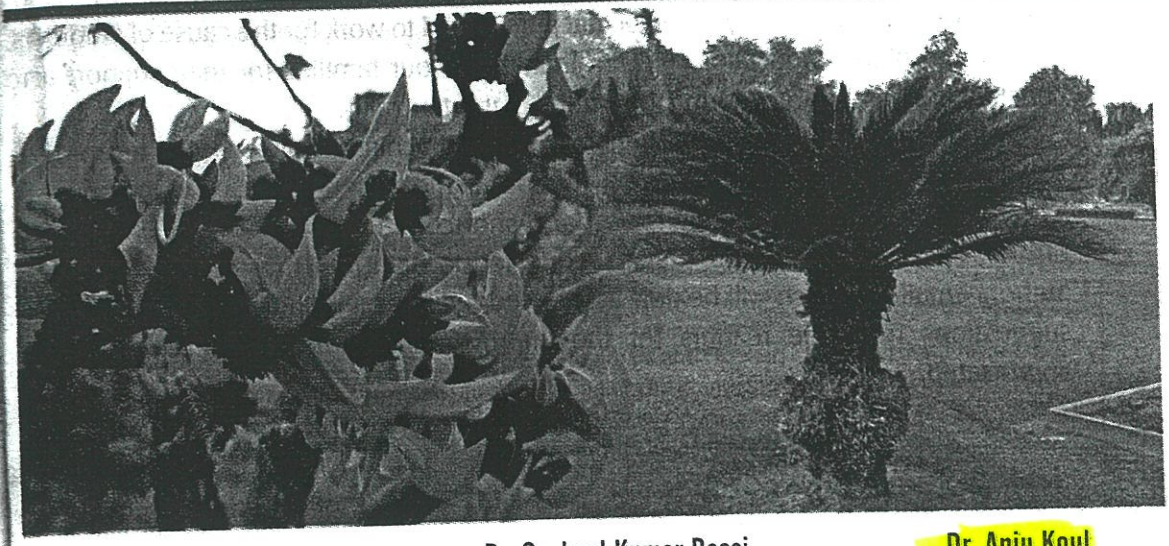
ISO 9001 Registered

New Syllabus
Jammu Univ. & GCW, Parade
Course No : UBOTC201

JMD
DINESH

Characteristics & Systematics of Seed Plants

For the students of Class B.Sc. (Sem. II) of Jammu University, GCW, Parade and various other Indian Universities as per new syllabus.



Dr. Anil Kumar Thakur
Associate Professor
Centre of Excellence, Govt. College,
Sanjauli, Shimla-6

Dr. Susheel Kumar Bassi
Principal
Govt. College Majheen
Distt. Kangra (H.P.)

Dr. Anju Koul
Asstt. Prof. In Botany
GCW, Parade Ground
(Autonomous College),
Jammu-180001

2019

Price { ₹ 298/-

S. DINESH & Co.
Sister Concern : S. VINESH & Co.
• JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

P-45

Contents

Our Distinguished books as per new H.P.U. syllabus Choice Based Credit System (CBCS)

For B.A. / B.Sc. / B.Com. Ist Year

MATHEMATICS

- Vinesh A Text Book of Differential Calculus — For B.A./B.Sc.
- Vinesh A Text Book of Differential Equations — For B.A./B.Sc.

Vinesh Excellent Series (Fully Solved) for all books in Mathematics are also available.

CHEMISTRY

- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons — For B.Sc.
- Dinesh States of Matter, Chemical Kinetics & Functional Organic Chemistry — For B.Sc.
- Dinesh Practical Chemistry - I (Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons) (Including Lab Manual) — For B.Sc.
- Dinesh Practical Chemistry - II (States of Matter, Chemical Kinetics & Functional Organic Chemistry) (Including Lab Manual) — For B.Sc.

PHYSICS

- Vinesh Mechanics — For B.Sc.
- Vinesh Electricity, Magnetism and EMT — For B.Sc.
- Vinesh Practical Physics (Mechanics) (Including Lab Manual) — For B.Sc.
- Vinesh Practical Physics (Electricity, Magnetism and EMT) (Including Lab Manual) — For B.Sc.

BOTANY

- Dinesh Biodiversity (Microbes, Algae, Fungi & Archegoniates) — For B.Sc.
- Dinesh Plant Ecology and Taxonomy — For B.Sc.

ZOOLOGY

- Vinesh Animal Diversity — For B.Sc.
- Vinesh Comparative Anatomy and Developmental Biology of Vertebrates — For B.Sc.

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

- Dinesh Environment Science — For B.A./B.Sc./B.Com.
- Dinesh [illegible] — For B.A./B.Sc./B.Com.

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
•JALANDHAR •DELHI •BANGALORE •COCHIN •RANCHI

ISBN No. 978-93-83380-56-5

VINESH

PRACTICAL BOTANY (Biodiversity-Microbes, Algae, Fungi & Archegoniates) B.Sc. I

New H.P.U. Syllabus based on
Annual Pattern
Under CBCS

VINESH

PRACTICAL BOTANY

(Biodiversity-Microbes, Algae, Fungi & Archegoniates)

(Including Lab Manual)

B.Sc. I (BOTA101PR) (Paper-I)

Dr. Bharti Razdan Kampasi
Sania Hamid

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982

اردو ادب میں رپورتاژ نگاری

ایک تحقیقی وتنقیدی مطالعہ

مصنف

ڈاکٹر جاوید اقبال مغل

اسسٹنٹ پروفیسر

اردو ادب میں رپورتاژ نگاری ایک تحقیقی وتنقیدی مطالعہ

ڈاکٹر جاوید اقبال مغل

قاسمی کتب خانہ

K.K.

URDU ADAB MEIN RIPORTAZ NIGARI

EK TAHQEEQI WA TANQEEDI MUTALIYA

Dr. Javaid Iqbal Mughal

M.A, B.ed., M.Phil., NET, Ph.D

مصنف کے بارے میں

نکلتی ہیں سب ناتمام خون جگر کے بغیر
نغمہ ہے سودائے خام خون جگر کے بغیر اقبال

ڈاکٹر جاوید اقبال مغل ایک سنجیدہ اسکالر اور استاد ہیں۔ انھوں نے اپنی ابتدائی تعلیم آبائی وطن سے حاصل کی۔ آپ نے بی۔ اے کی تعلیم گورنمنٹ ڈگری کالج پونچھ سے حاصل کی۔ اعلیٰ تعلیم کے لئے جموں یونیورسٹی کا رخ کیا۔ جہاں سے انھوں نے بی۔ ایڈ اور شعبہ اردو جموں یونیورسٹی سے ایم۔ اے۔ ایم۔ فل۔ کے ساتھ ساتھ پی۔ ایچ۔ ڈی کی سند بھی ۲۰۱۶ء میں حاصل کی۔ ۲۰۱۳ء میں یو۔ جی۔ سی۔ نیٹ کے امتحان میں بھی کامیاب ہوئے۔ ۲۰۱۷ء میں پبلک سروس کمیشن کے زیر اثر موصوف کا تقرر بحیثیت اسسٹنٹ پروفیسر ہوا اور موصوف اس وقت پی۔ جی۔ کالج برائے خواتین گاندھی نگر (گلمرگ یونیورسٹی آف جموں) میں درس وتدریس کے فرائض انجام دے رہے ہیں۔

ڈاکٹر جاوید اقبال مغل چونکہ میرے شاگرد رہے ہیں۔ ان کی قابلیت اور صلاحیت سے اچھی طرح واقف ہوں۔ ذہانت ہونہار، شریف النفس اور ملنسار ہیں محنت اور لگن ان کا نصب العین رہا ہے۔ ان کی منٹو پر اس سے قبل ایک کتاب بعنوان "منٹو کی فاکہ نگاری" ۲۰۱۳ء میں منظر عام پر آچکی ہے۔ جسے ادبی حلقوں نے کافی سراہا ہے۔ ملک کی مختلف ریاستوں سے نکلنے والے اردو رسائل وجرائد میں ان کے متعدد مضامین شائع ہوتے رہے ہیں۔

موصوف کی دوسری کتاب بعنوان "اردو ادب میں رپورتاژ نگاری ایک تحقیقی وتنقیدی مطالعہ" جو اس وقت میرے ہاتھ میں ہے اردو صنف "رپورتاژ" میں ایک اضافے کی حیثیت رکھتی ہے۔ انھوں نے اس کتاب میں "رپورتاژ" پر بحث کرتے ہوئے سیدھی سادی تصویروں کے ساتھ ساتھ ادبی اسلوب، تخیل کی بلندی اور فکری رفعت اور جمالیاتی کے ساتھ داخلیت کو بھی بروئے کار لا کر خامہ فرسائی کی ہے اور یہی رپورتاژ کی وصفت ہے جو ایک مصنف کے رپورتاژ کو صحافت سے الگ کر کے ادب میں شامل کرتی ہے۔ موصوف نے چشم بینا سے چھوٹی چھوٹی جزیات کو بھی منظر عام پر لا کر اس پر کھل کے بات کی ہے۔ میں انہیں اس ادبی کاوش کے لئے دلی مبارک باد پیش کرتا ہوں اور دعا گو ہوں کہ آنے والے وقتوں میں بھی وہ اپنی ادبی کوششوں کو جاری رکھ کر اردو ادب کی دنیا میں بیش بہا اضافہ کرتے رہیں گے۔

پرنسپل امتیاز نسیم ہاشمی

₹ 395/-

QASMI KUTUB KHANA

E-92, Abul Fazal Enclave, Okhla New Delhi

Talab Khatikan, Jama Masjid, Jammu Tawi - 180001

Ph. 9797352280 | 7889903800

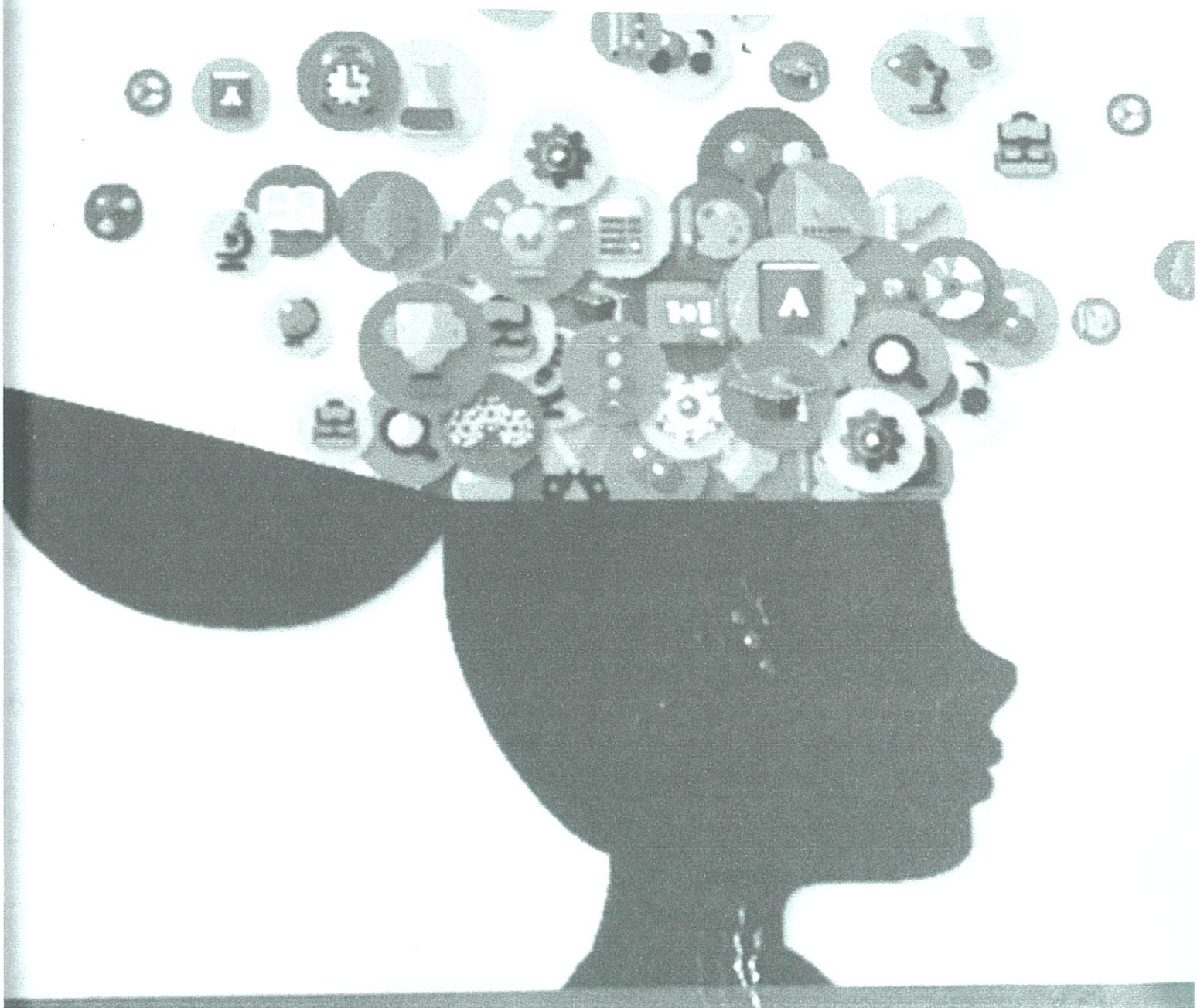
E-Mail: qasmikutubkhana0729@gmail.com

ISBN 978-93-83030-70-5

9789383030705

Ramandeep Kaur

HOME SCIENCE: NURTURING INNOVATIONS & SKILL DEVELOPMENT



PROF. SUDHA KAIVAL
(CHIEF EDITOR)

DR. SANGEETA DEWAN
(SUB EDITOR)

DR. RUPINDER KAUR BHUMM
(SUB EDITO

P-50

Consumer Clothing Disposal Behaviour: A Comparative Study among Urban and Rural Women (30-50 yrs) in Jammu

Sanmeet kaur[a], Ramandeep Kour[b]
[a]P.G student, [b]Assistant professor
Department of Textile and Apparel Science
Cluster University of Jammu, India
Sanmeetk81@gmail.com

Abstract

With the growing population and improvement of living standards, the consumption of textile has subsequently increased and the overconsumption of clothing has had a significant environmental impact on society. Clothing consumption can be regarded as an aspect of sustainability issues, in which consumers feel responsible to contribute to sustainable consumption by disposing of their used clothing in the right way. Hence, there is a need to understand how consumers can dispose of their unwanted or used textile products. The survey was conducted among a hundred women, fifty each from rural and urban areas, randomly selected from tehsil Jammu. The data was analyzed using descriptive statistics percentage, chi-square, t-test, and co-relation. According to the results, almost half of the respondents of the survey in Tehsil Jammu would like to dispose of their clothes sustainably by donating to charities/servants and by giving them to friends/relatives. Most of the respondents preferred their used or unwanted clothes for reutilization. Reutilization is one of the better ways of reducing post-consumer textile waste. The respondents considered a lack of time and knowledge as the most important factors for non reutilization of textile products. All most all of the respondents were aware of the environmental issues caused by the clothing disposal, which was little, more in urban respondents. Environmental awareness and socio personal profile of the respondents had a great effect on clothing disposal behaviour.This study contributes to the literature by revealing new insights about consumer disposal behaviour.

Keywords: *sustainable consumption, Reutilization, Clothing Disposal Behaviour, Awareness of the Environment.*

Introduction

Textile and Apparel industry is one of the most essential consumer goods industries. However, the textile industry is also accused of being one of the most polluting industries. Not only production but consumption of textiles and apparel also produce waste (Kushwaha, 2016) In the apparel industries, disposal of clothing is of great interest because the amount of textile waste produced annually is on the rise (Claudio, 2007). In apparel consumption, the term disposal refers to whether a garment is simply thrown away, resold, reused, or recycled (Shim, 1995). Due to fast fashion trends,the majority of consumers perceive the lifetime of clothing to be shorter than ever before (Morley *et al.*, 2006) that led to a large amount of clothingbeing disposed of or destroyed.

P-52

Aran kumar

P-22

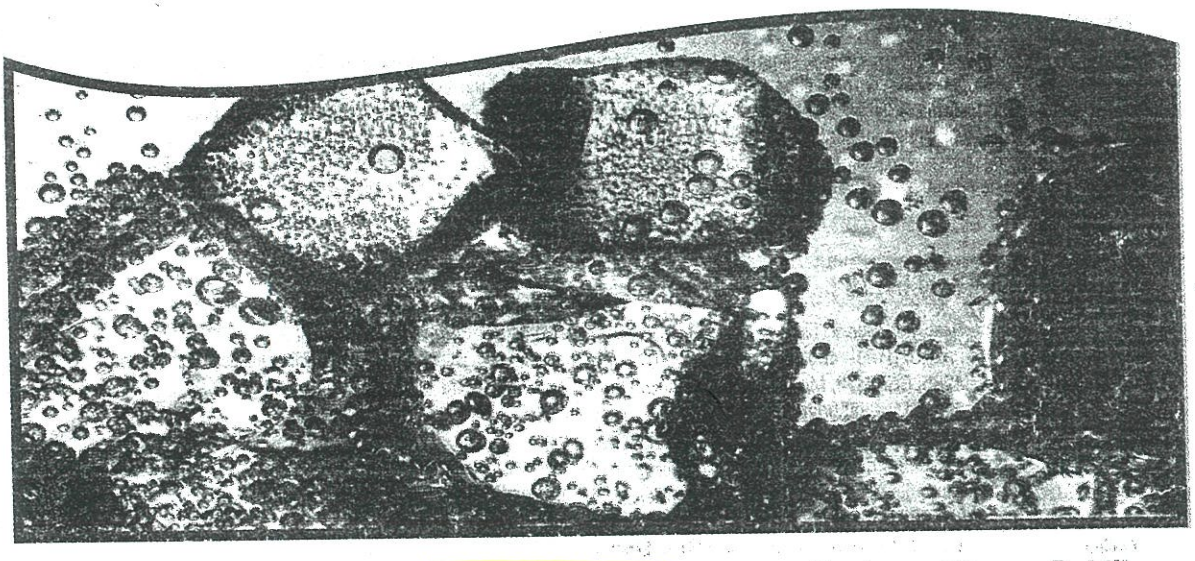
As per new syllabus
of MDU, KUK, CDLU & IGU

JMD
VINESH

A Text Book of

Physical Chemistry

For the students of Class B.Sc. (Sem. II) of MDU, KUK, CDLU, IGU and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
Govt. P.G. College (Boys), Udhampur

Dr. Anand Kumar Rohilla
Assistant Professor,
Deptt. of Chemistry
A.I. Jat H.M. College, Rohtak

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
• JALANDHAR• DELHI• BENGALURU• COCHIN• RANCHI

ISBN: 978-93-89800-28-9
Ist edition: Jan-2020

P 453

P-21

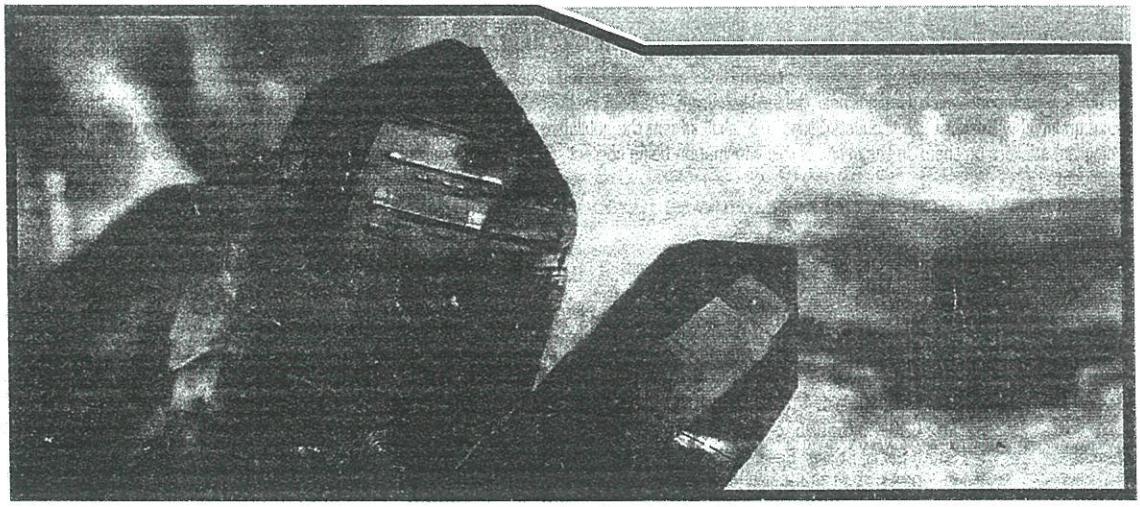
As per new CBCS Syllabus of
Cluster University of Jammu

JMD
VINESH

Inorganic Materials of Industrial Importance

B.Sc. Semester - V

For the students of Class B.Sc. (Sem. V) of Cluster University of Jammu and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
Govt. P.G. College (Boys), Udhampur

2020

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

• JALANDHAR• DELHI• BENGALURU• COCHIN• RANCHI

First Edition : Aug - 2019

ISBN : 978-93-88976-68-8

P-54

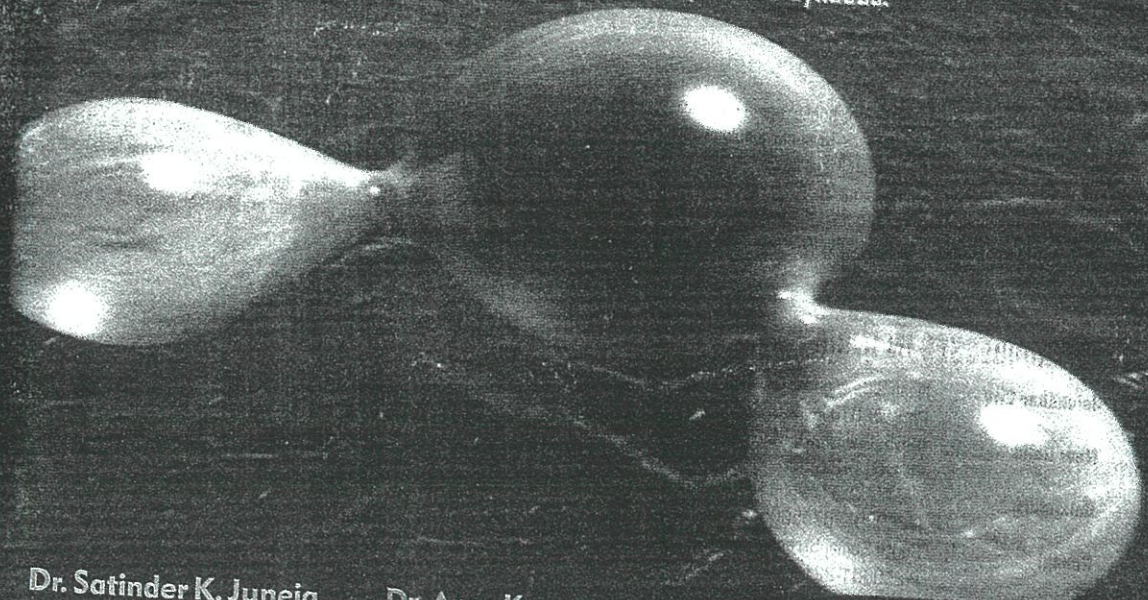
P-20

As per new syllabus
of MDU, KUK, CDLU & IGU

JMD
VINESH

A Text Book of
Organic Chemistry

For the students of Class B.Sc. (Sem. II) of MDU, KUK, CDLU, IGU and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
Govt. P.G. College (Boys), Udhampur

Dr. Anil K. Narwal
Assistant Professor,
Deptt. of Chemistry
A. I. Jat H. M. College, Rohtak

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
•JALANDHAR •DELHI •BENGALURU •COCHIN •RANCHI
ISBN: 978-93-89800-26-5
1st Edition : Jan. 2020.

P-55

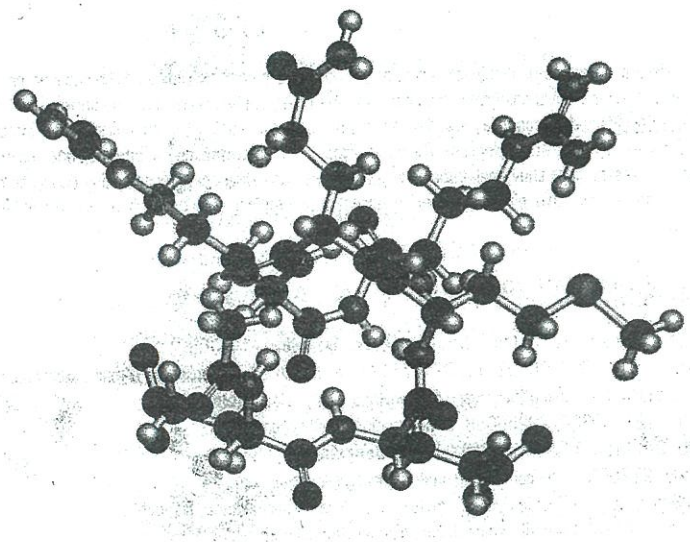
P-19

As per new syllabus
of MDU, KUK, CDLU & IGU

JMD
VINESH

A Text Book of
Inorganic Chemistry

For the students of Class B.Sc. (Sem. II) of MDU, KUK, CDLU, IGU and various other Indian Universities as per new syllabus.



Dr. Ved Kumar
P.G. Deptt. of Chemistry
GDC, Udhampur,
Jammu & Kashmir

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
Govt. P.G. College (Boys), Udhampur

Dr. Mukesh Sharma
Assistant Professor,
Deptt. of Chemistry
Vaish College, Rohtak

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
• JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

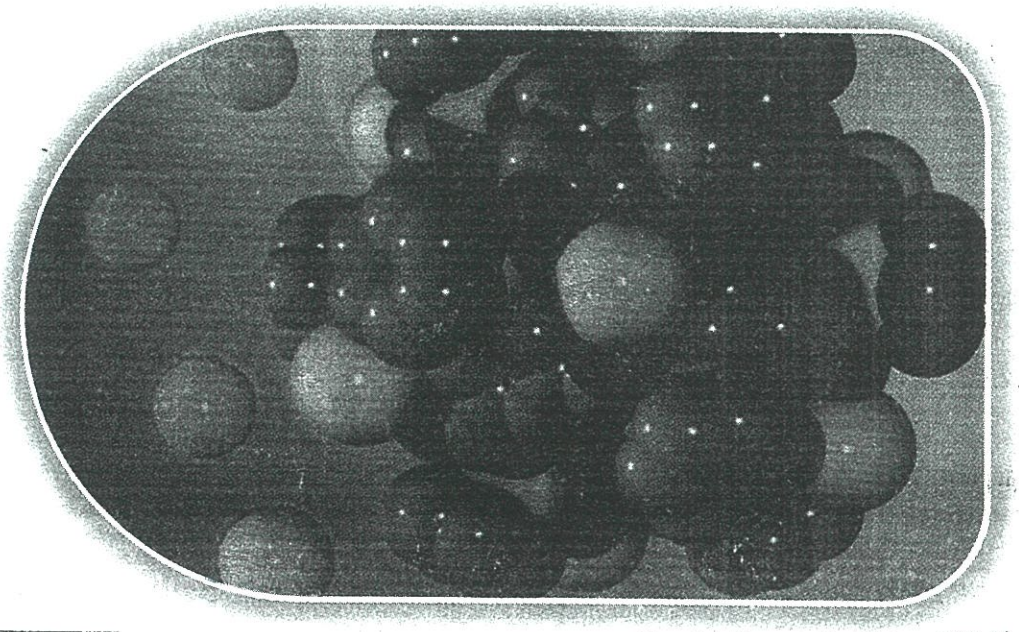
ISBN: 978-93-89800-27-2
1st edition: Jan-2020

P-56

P-17

AQMCS JAS-ANZ
ISO 9001 Registered

New Syllabus
Jammu University, Jammu
Paper Code : CH-602 (Theory)



DINESH JMD

ISBN : 978-93-5211-320-0
1st edition : Jan 2017 (2017)

A TEXT BOOK OF

Organic Chemistry—II

For the students of Class B.Sc. (Semester VI) of Jammu University, Jammu and other Indian Universities as per new syllabus.

Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Dept. of Chemistry
GCW, Parade, Jammu.

Dr. Puja Nanda
M.Sc., Ph.D., NET, GATE
Dept. of Chemistry
G.G.M. Science College, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Dept. of Chemistry
G.G.M. Science College, Jammu.

2017

Your Satisfaction is our Guarantee

S. DINESH & Co.

P-57

Eisha Gohil

MIRRORS

An Anthology of Poems

EISHA GOHIL

P-58

MIRRORS

An Anthology of Poems

Eisha Gohil

FREESPACE EDUTECH

FreeSpace Publishing

P-59

ISBN-13: 9798695769852

Cover design by: Pothi.com
Library of Congress Control Number: 2018675309

PREFACE

Life takes different turns and at times, moving with the flow becomes difficult. Art, as a companion, proves to be very helpful in relaxing a stressful mind. "Mirrors" is an anthology of my poems which will help us to believe in ourselves and find a way to move forward. I believe that life is a journey and, in our life, we keep on taking different roads, reaching different destinations and meeting different people. With every breath we take, we keep floating in the river of emotions. In the course of writing, I realized that the poems I wrote, the feelings I expressed, the bonds which I discovered, were the impressions embossed by the people who met me in my life.

"Mirrors" puts light on the journey of our existence. We are all made of same emotions. What makes us different, are our values and beliefs. Individual differences just lie in expressing those emotions, according to the past experiences and mapping them to the present context. We all are travelers of life and though we have different roads to take, different paths to tread, our destination remains the same. When we look at a fellow being, actually we are looking at our own reflection. In this ever changing world, we keep interacting with each other without realizing that what is real is just a reflection,

We are living in the world of mirrors, unique in our own way but sharing the same essence and oneness. *(I am a mirror for you, you are a mirror for me).*

Eagerly looking forward to your feedback and criticisms to make my future work better. You can either visit me at Amazon Author Central or email to the publisher or me.

Wish you all a meaningful reading experience.

Elsha Gohil, Poetess
elshagohil86@gmail.com
25th September 2020

P-60

CONTENTS

ACKNOWLEDGMENTS

I offer my gratitude to the God Almighty, for bestowing his grace on all my writings and for making journey of my life a smooth one. I am thankful to Him for giving me this beautiful life and for making me capable enough to appreciate his creations. (For every road I take, you remember me, I remember you).

I express special thanks to my parents, family, friends and well-wishers. Without their selfless love, blessings and endless support, my efforts would be fruitless.

I am grateful to the publishers for giving me this opportunity and showing the confidence in me.

Last but not the least, I offer my sincere thanks to all the readers of this book. I hope you enjoy my attempt of choosing and assembling words and changing them into verses which depict a journey towards fulfilment, a journey from losing hope and to gaining it once again.

Eisha Gohil, Poetess

eishagohil86@gmail.com

25th September 2020

ABOUT THE AUTHOR

Ms. Eisha Gohil is a budding poetess whose work has been published in many periodicals and journals. She was born in the holy city, Hardwar (Uttrakhand) and brought up in Jammu. She has a master's degree in Psychology from the University of Jammu. Presently, she is working as an Assistant Professor and teaches psychology to undergraduate students.

Besides participating in sports and other co curricular activities, right from childhood, she was interested in painting and literature. Her entry in a competition organized by a supplement of Down to Earth was judged as one of the best. This encouraged her to follow her passion of making abstract patterns and composing verses.

Ms. Gohil's first published work was an anthology of poems titled "The Other Side", which was published by Blue Rose Publishers in the year 2017. Some of her abstract patterns were exhibited during YAYAVAR-The Literary festival held in the year 2019. During that event, she recited two of her poems in front of the host of critics.

Recently, her two poems got published in a book titled 'ISHQ CON'-a bleeding heart, published by fourclover publication house, which was a multilingual anthology of quotes, poems, micro-tales and stories contributed by 26 different writers pan India. Also, her two other poems "Turning into an atheist" and "Pearls of Pain" were published in 'Sheeraza' which is a quarterly literary journal published by Jammu and Kashmir Academy of Arts, Culture and Languages.

Mirrors

Life takes different turns and at times, moving with the flow becomes difficult. Art, as a companion, proves to be very helpful in relaxing a stressful mind. "Mirrors" is an anthology of my poems which will help us to believe in ourselves and find a way to move forward. I believe that life is a journey and, in our life, we keep on taking different roads, reaching different destinations and meeting different people. With every breath we take, we keep floating in the river of emotions. In the course of writing, I realized that the poems I wrote, the feelings I expressed, the bonds which I discovered, were the impressions embossed by the people who met me in my life.

"Mirrors" puts light on the journey of our existence. We are all made of same emotions. What makes us different, are our values and beliefs. Individual differences just lie in expressing those emotions, according to the past experiences and mapping them to the present context. We all are travelers of life and though we have different roads to take, different paths to tread, our destination remains the same. When we look at a fellow being, actually we are looking at our own reflection. In this ever changing world, we keep interacting with each other without realizing that what is real is just a reflection.

We are living in the world of mirrors, unique in our own way but sharing the same essence and oneness. (I am a mirror for you, you are a mirror for me).

Ms. Eisha Gohil is a budding poetess whose work has been published in many periodicals and journals. She was born in the holy city, Hardwar (Uttrakhand) and brought up in Jammu. She has a master's degree in Psychology from the University of Jammu. Presently, she is working as an Assistant Professor and teaches psychology to undergraduate students.

Besides participating in sports and other co-curricular activities, right from childhood, she was interested in painting and literature. Her entry in a competition organized by a supplement of Down to Earth was judged as one of the best. This encouraged her to follow her passion of making abstract patterns and composing verses.

Ms. Gohil's first published work was an anthology of poems titled "The Other Side", which was published by Blue Rose Publishers in the year 2017. Some of her abstract patterns were exhibited during YAYAVAR-The Literary festival held in the year 2019. During that event she recited two of her poems in front of the host of critics.

Recently, her two poems got published in a book titled 'ISHQ CON'-a bleeding heart, published by fourclover publication house, which was a multilingual anthology of quotes, poems, micro-tales and stories contributed by 26 different [illegible]ia.

p-65

مجوزہ نصاب بمطابق نیو ایجوکیشن پالیسی 2020

تدریسِ قواعد اُردو درس اوّل

(اُردو قواعد اور اصطلاحات)

برائے بی۔اے، بی۔ایس۔سی، بی۔کم، بی۔بی۔اے

کلسٹر یونیورسٹی آف جموں

مؤلف

ڈاکٹر جاوید اقبال

قاسمی کتب خانہ

تدریس قواعد اُردو درس اول

ڈاکٹر جاوید اقبال

K.K.

According to New Syllabus NEP-2020

TADREES QAWAID URDU DARS AWWAL

Title: Urdu Grammar and Composition

Multidisciplinary (MD)

Course Code 1URLMULDC-01

Credit : 03

B.A, B.SC, B.Com & BBA

CLUSTER UNIVERSITY OF JAMMU

Dr. Javaid Iqbal

₹ 280/-

QASMI KUTUB KHANA

E-92, Abul Fazal Enclave, Okhla New Delhi

Talab Khatikan, Jama Masjid, Jammu Tawi - 180001

Ph. 9797352280 | 191-3593736

G-Mail:- qasmikutubkhana0729@gmail.com

Email:- info@qasmikutubkhana.store

website:- qasmikutubkhana.store

Dr. Salindu

ISO 9001 Registered

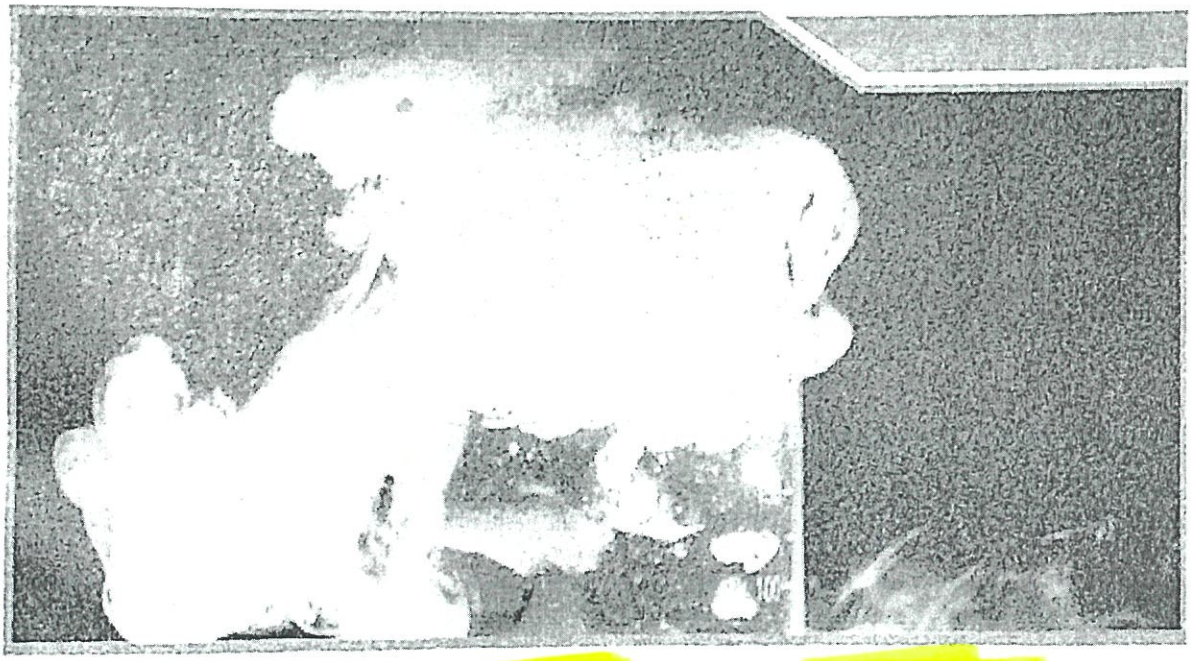
As per new CBCS Syllabus of
Jammu University & GCW, Parade

DINESH

A TEXT BOOK OF

COORDINATION CHEMISTRY, STATES OF MATTER & CHEMICAL KINETICS

For the students of Class B.Sc. (Sem. IV) of Jammu University, GCW, Parade and various other Indian Universities as per new syllabus



Dr. Puja Nanda
M.Sc., Ph.D., NET, GATE
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Yash Paul
M.Sc., Ph.D.,
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Arun Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
G.G.M. Science College, Jammu.

2020

since 1982

Price ₹ 165/-

S. DINESH & Co.

Sister Concern : S. VINESH & Co.

• JALANDHAR• DELHI• BENGALURU• COCHIN• RANCHI

8-67

A Few Words From The Authors

The book entitled "Dinesh Coordination Chemistry, States of Matter & Chemical Kinetics" has been written strictly according to the new syllabus prescribed by Jammu University & GCW, Parade for B.Sc., Semester-IV students. This book has been written strictly as per the prescribed syllabus and the instructions for the paper setters and candidates.

The object of this book is to provide a helpful text to the students. It is a challenge to make the most important concepts and methods understandable to the undergraduate students. It is intended to be easy to read and understand and is based on descriptive chemistry combined with some reason why.

The subject matter has been presented in a comprehensive, lucid and systematic manner which is easy to understand even by self study. We believe that learning by solving gives more competence and confidence in the subject. Keeping this in view, sufficiently large number of varied problems with solutions and problems for self assessment are given in each chapter.

We have kept the book to a reasonable size. It is designed to serve as a teaching text and not as a reference book. The object has been to make the book more accessible to the readers. Every effort has been made to avoid superfluity and wherever possible clear explanation has been provided.

Every effort has been made to make the book error free but inspite of this, some errors might have crept in. Any mistake or error or discrepancy noted by readers may please be brought to our notice which shall be taken care of in the next edition of the book.

We are also thankful to our fellow teachers for their healthy and critical suggestions during the preparation of this book. We are also thankful to Sh. S.P. Jain (B.E.) and Sh. Vinesh Jain (B.Com.), the publishers of this book for their keen interest and whole hearted co-operation for the promotion of the book.

Suggestions for the further improvement of the book will be highly appreciated.

–Authors

PRINTING HISTORY
1st Edition : Jan., 2016
3rd Edition (Revised as per new syllabus) : Dec., 2017
4th Edition : Dec., 2018
5th Edition : Jan., 2019
6th Edition : Jan., 2020

Published by : S P JAIN, B.E., S DINESH & Co., Near Sitla Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph. : 0181-4606108, 09, 11, 7710711711
Printed at : Maangilk Printers, Unit- S. Dinesh & Co., Ram Bagh, Transport Nagar, Jalandhar. Ph. : 0181-5028620

f-68

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester III & IV)

Chemistry

- Dinesh Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. III
- Dinesh Functional Group Organic Chemistry-IV, Solutions, Phase Equilibrium, Electrochemistry & States of Matter (Cluster University) — For Sem. III
- Vinesh Practical Chemistry (J.U., C.L.U. & G.C.W. Parade) — For Sem. III
- Dinesh Cosmetics, Perfumes and Medicinal Agents from Natural Sources (SEC) (J.U., C.L.U., S-IV, G.C.W.) — For Sem. IV
- Dinesh Coordination Chemistry, States of Matter & Chemical Kinetics (J.U. & G.C.W. Parade) — For Sem. IV
- Vinesh States of Matter-II, Chemical Kinetics & Coordination Chemistry (Cluster University) — For Sem. IV
- Vinesh Physical Chemistry (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV
- Vinesh Analytical Chemistry (SEC) (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV

Physics

- Dinesh Thermodynamics and Statistical Mechanics (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Physics And Statistical Mechanics (Cluster University) — For Sem. III
- Vinesh Physics — For Sem. IV
- Vinesh Wave and Optics — For Sem. IV
- Vinesh Practical Physics — For Sem. IV

Botany

- Dinesh Plant Anatomy, Embryology and Ecology (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Plant Anatomy And Embryology (Cluster University) — For Sem. III
- Vinesh Nursery, Gardening and Floriculture (SEC) (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Plant Physiology and Metabolism (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV
- Dinesh Ethnobotany (SEC) (S-IV C.L.U., S-VI J.U.) — For Sem. IV
- Dinesh Biofertilizer (SEC) (S-IV J.U., S-VI C.L.U.) — For Sem. IV

Zoology

- Vinesh Physiology and Biochemistry — For Sem. III
- Vinesh Apiculture (SEC) (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Aquarium Fish Keeping (SEC) (Cluster University) — For Sem. III
- Vinesh Sericulture (SEC) (Cluster University) — For Sem. IV
- Vinesh Principles of Genetics and Evolutionary Biology — For Sem. IV
- Vinesh Physical Anthropology (SEC) (Cluster University) — For Sem. IV
- Vinesh Aquarium Fish Keeping (SEC) (J.U. & G.C.W. Parade) — For Sem. IV

Mathematics

- Vinesh A Text Book of Real Analysis — For Sem. III
- Vinesh A Text Book of Algebra — For Sem. IV

Vinesh Excellent Series (Fully Solved) for all books in Mathematics are also available.

since 1982

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

•JALANDHAR • DELHI • BANGALORE • COCHIN • RANCHI

An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-89899-03-0

9 789389 899030

70

About the Authors

Dr. Bharti Razdan Kampasi

Dr. Bharti retired as Associate Professor in Botany in January 2020 from Higher Education Department Jammu and Kashmir. She qualified her M.Sc. and M.Phil in Botany from Kashmir University in 1980 and 1982 respectively. She has worked under the able guidance of Prof. P.Kachroo and Prof. S.S. Bir on Cytomorphology of Ferns of Kashmir. Her work is published in national and international research journals. She was awarded Ph.D degree by Kashmir University in 1988. She has teaching experience of 35 years.

Sania Hamid

She is Assistant Professor in Botany, J&K Higher Education Department presently posted in Govt. PG College for Women Gandhi Nagar, Cluster University of Jammu. She has teaching experience of 13 years at undergraduate level. She was awarded a gold medal for qualifying M.Sc. Botany in 2006 by University of Jammu. She also qualified CSIR-UGC NET-JRF in 2006.

Our Distinguished Books Published on Practical Botany :

- Practical Botany - I (Microbes, Cryptogams & Seed Plants) (Major / Minor) B.Sc. Sem. I by Dr. Bharti Razdan Kampasi, Sania Hamid
- Practical Botany - II (Economic Botany, Utilization & Conservation of Plants) (Major / Minor) B.Sc. Sem. II by Dr. Shweta Sarmoo, Dr. Bharti Razdan Kampasi
- Practical Botany - III (Cell & Molecular Biology, Diversity of Microbes, Algae, Bryophytes & Pteridophytes) (Major / Minor) B.Sc. Sem. III by Dr. Bharti Razdan Kampasi, Dr. Anju Rani, Sania Hamid
- Practical Botany (Phycology, Mycology & Archegoniate) (Major / Minor) B.Sc. Sem. III by Dr. Bharti Razdan Kampasi, Sania Hamid
- Practical Botany (Plant Physiology & Metabolism) B.Sc. Sem. IV by Dr. Bharti Razdan Kampasi, Dr. Dheera Sarmoo
- Practical Botany (Cell Biology & Genetics) B.Sc. Sem. IV by Dr. Bharti Razdan Kampasi, Dr. Anju Rani
- Practical Botany (Economic Botany & Biotechnology) B.Sc. Sem. VI by Dr. Bharti Razdan Kampasi, Dr. Rahul Sharma

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
JALANDHAR · DELHI · BANGALORE · COCHIN · RANCHI
An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-5568-017-6

Buy Our Books at www.sdineshonline.in | amazon | All Leading Bookstores

Follow us on S.Vinesh Co & S.Dinesh Co | vinesh_sdinesh books | S.Vinesh & Co. (S.Dinesh & Co.)

Practical Botany (Phycology, Mycology & Archegoniate) (Major/Minor) B.Sc. Sem. III (CUJ)

Based on Four Year Undergraduate Program (FYUGP) as per National Education Policy (NEP)

VINESH

Practical Botany

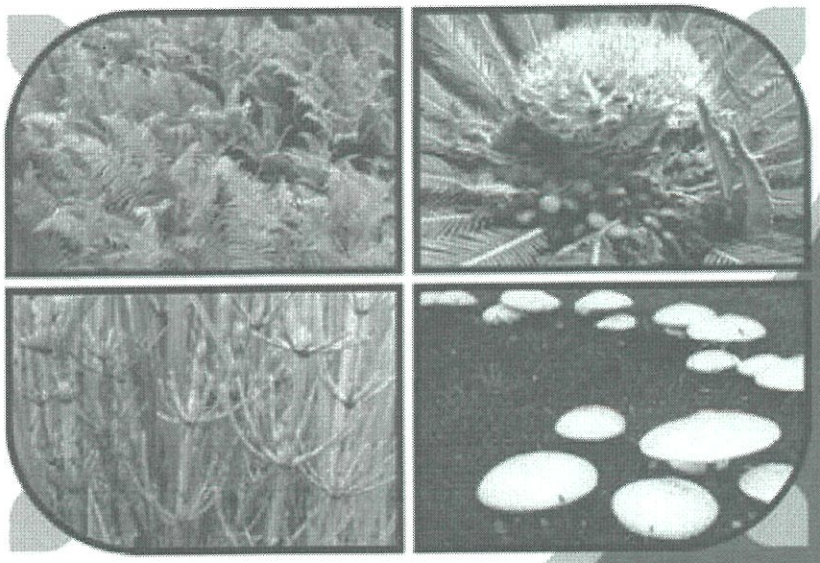
(Phycology, Mycology & Archegoniate)

(Major / Minor)

B.Sc. SEMESTER - III (Cluster University Jammu)

Dr. Bharti Razdan Kampasi

Sania Hamid



About the Authors

Dr. Bharti Razdan Kampasi

Dr. Bharti retired as Associate Professor in Botany in January 2020 from Higher Education Department Jammu and Kashmir. She qualified her M.Sc. and M.Phil in Botany from Kashmir University in 1980 and 1982 respectively. She has worked under the able guidance of Prof. P.Kachroo and Prof. S.S. Bir on Cytomorphology of Ferns of Kashmir. Her work is published in national and international research journals. She was awarded Ph.D degree by Kashmir University in 1986. She has teaching experience of 35 years.

Dr. Anju Koul

She is Assistant professor in Botany in J & K Higher Education Department and is currently working in Govt. PG College Gandhi Nagar, Cluster University of Jammu, Jammu and Kashmir. She has done her research in the field of Mycology and Mycotoxicology under the guidance of Prof. Geeta Sumbali and was awarded Ph. D. degree in 2007, by University of Jammu. She has also qualified the UGC NET in 2002 and 2003.

Sania Hamid

She is Assistant Professor in Botany, J&K Higher Education Department presently posted in Govt. PG College for Women Gandhi Nagar, Cluster University of Jammu. She has teaching experience of 13 years at undergraduate level. She was awarded a gold medal for qualifying M.Sc. Botany in 2004 by University of Jammu. She also qualified CSIR-UGC NET-JRF in 2006.

Our Distinguished Books Published on Practical Botany :

- Practical Botany (Microbes and Cryptogams) B.Sc. Sem I by Dr. Bharti Razdan Kampasi, Sania Hamid
- Practical Botany (Economic Botany, Utilization and Conservation of Plants) B.Sc. Sem II by Dr. Shveta Sarraju, Dr. Bharti Razdan Kampasi
- Practical Botany (Anatomy, Reproductive Biology & Ecology) B.Sc. Sem III by Dr. Bharti Razdan Kampasi, Dr. Neeti Dabber Gupta
- Practical Botany-III (Diversity of Microbes, Algae, Bryophytes and Pteridophytes, Cell & Molecular Biology) (Major/Minor) B.Sc. Sem III by Dr. Bharti Razdan Kampasi, Dr. Anju Koul, Sania Hamid
- Practical Botany (Plant Physiology & Metabolism) B.Sc. Sem IV by Dr. Bharti Razdan Kampasi, Dr. Shveta Sarraju
- Practical Botany (Cell Biology & Genetics) B.Sc. Sem V by Dr. Bharti Razdan Kampasi, Dr. Anju Koul
- Practical Botany (Economic Botany & Biotechnology) B.Sc. Sem VI by Dr. Bharti Razdan Kampasi, Dr. Rabia Sharma
- Practical Botany (Economic Botany & Utilization and Conservation of Plants) (Major/Minor) B.Sc. Sem VI by Dr. Shveta Sarraju, Dr. Bharti Razdan Kampasi

S. VINESH & Co.
Sister Concern
S. DINESH & Co.
since 1982
JALANDHAR · DELHI · BANGALORE · COCHIN · RANCHI
An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-81-8028194-4

Buy Our Books at www.sdineshonline.in | amazon | All Leading Booksellers

Follow us on S.Vinesh Co & S.Dinesh Co | vinesh_sdinesh books | S.Vinesh & Co. (S.Dinesh & Co.)

VINESH

Practical Botany–III (Cell and Molecular Biology, Diversity of Microbes, Algae, Bryophytes & Pteridophytes) (Major/Minor) B.Sc. Sem III (FYUGP)

Based on Four Year Undergraduate Program (FYUGP)
as per National Education Policy (NEP)

VINESH

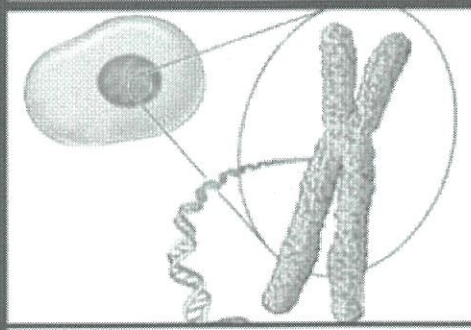
Practical Botany–III

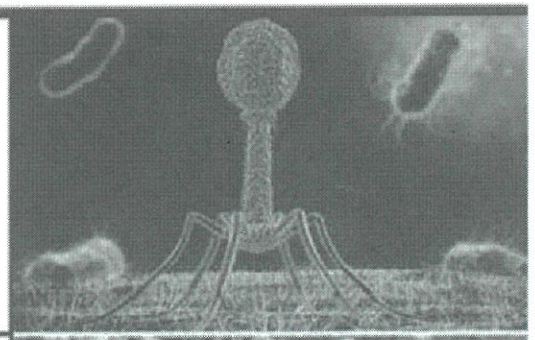
(Cell and Molecular Biology, Diversity of Microbes, Algae, Bryophytes & Pteridophytes)

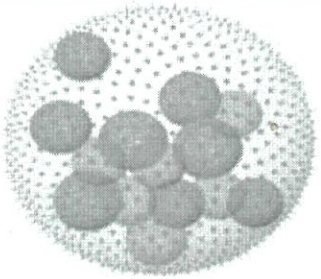
(Major / Minor)

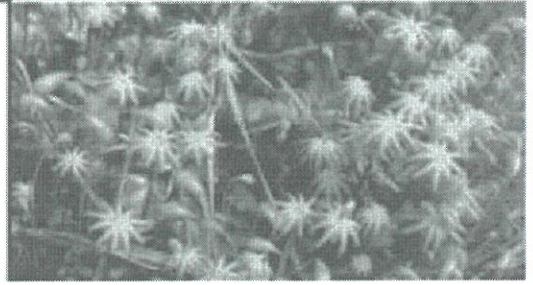
B.Sc. SEMESTER - III (Jammu University)

Dr. Bharti Razdan Kampasi Dr. Anju Koul Sania Hamid









Anju Koul & Sania Hamid

74

Based on the syllabi of Undergraduate courses taught at Colleges and Universities of Jammu, Ladakh, C.U.J., G.C.W. Parade, Kashmir University, C. U. Srinagar and Himachal Pradesh

JMD
VINESH

Practical Botany

(Economic Botany & Biotechnology)

B.Sc. - (Semester VI) J.U., L.U., C.U.J., G.C.W. Parade, K.U., C.U.S.

B.Sc. - (IIIrd Year) H.P.U.

Dr. Bharti Razdan Kampasi

Dr. Rahul Sharma

S. VINESH & Co.

Sister Concern :

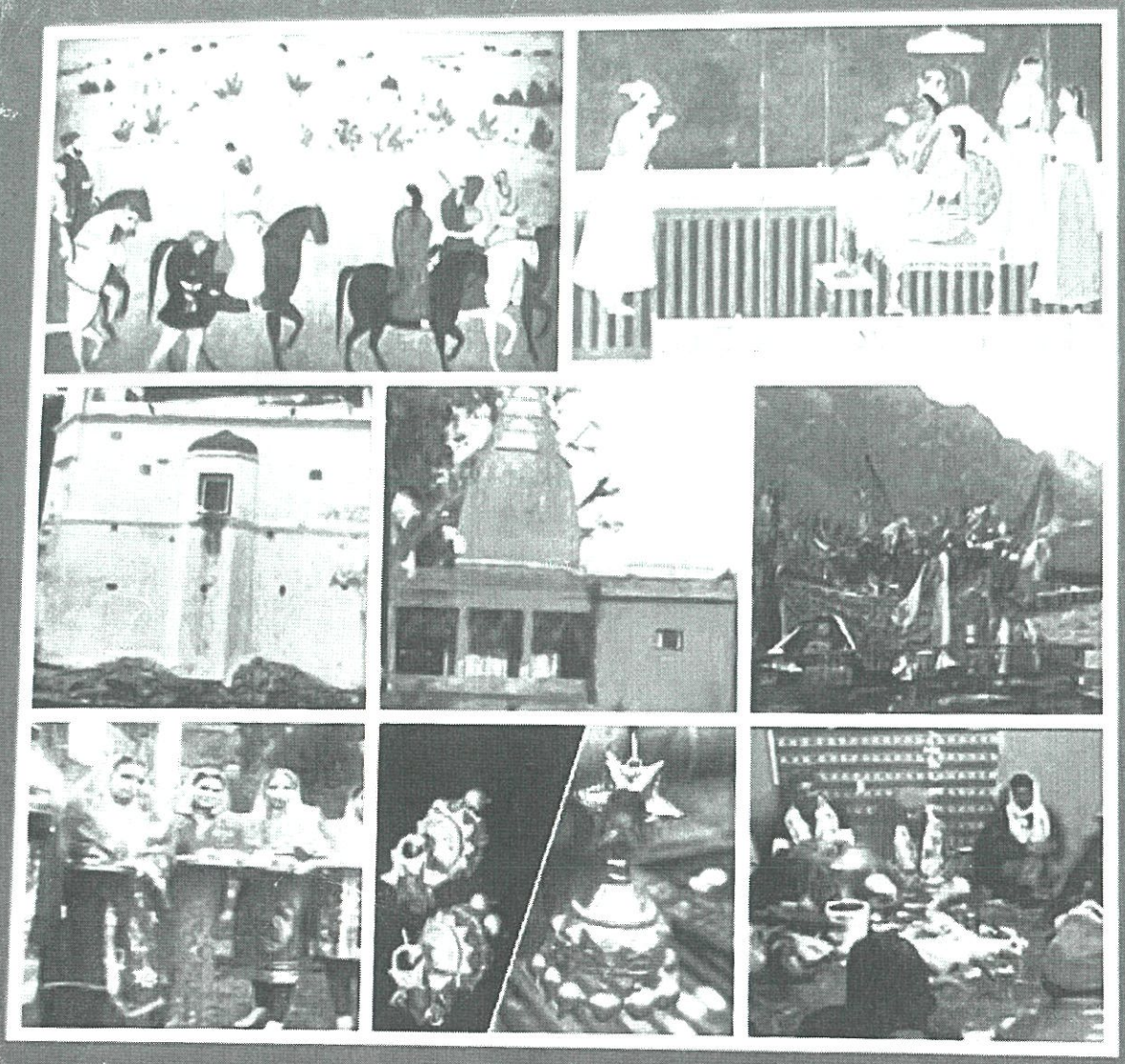
S. DINESH & Co.

since 1982

Contents

74

Chapter in Book : By Dr Anupama Pandotra (Zoology)
Publication



DEMYSTIFYING JAMMU

History, Heritage and Culture

Edited by

Sindhu Kapoor • Shalini Rana

Contents

OBEROI BOOK SERVICE
Shop Number-20-21/A-1
Bahu Plaza Complex, Trikuta Nagar
Jammu–180002

KANISHKA PUBLISHERS, DISTRIBUTORS
4697/5-21A, Ansari Road, Daryaganj
New Delhi -110 002
Phones : 2327 0497, 2328 8285
Fax : 011-2328 8285
E-mail : kanishka_publishing@yahoo.co.in
kanishkabooks@gmail.com

Demystifying Jammu: History, Heritage and Culture
First Published-2022

ISBN: 978-93-93066-01-5

PRINTED IN INDIA

Published by I.P. Singh for Oberoi Book Service, Shop Number-20-21/A-1, Bahu Plaza Complex, Trikuta Nagar, Jammu–180002, Typeset by Sunshine Graphics, Delhi, and Printed at G.S. Printers, Delhi.

17

Species Composition of the Avifaunal Heritage of Forests of Jammu (J&K)

Dr. Anupama Pandotra

Abstract

The study of bird communities has been a significant area of research in wildlife. The study of avian fauna is concerned with identifying the patterns that characterize natural assemblages of species and understanding what has caused these patterns. These patterns vary both in space and time. A bird community pattern of any region has a close correlation with the vegetation structure of that area. The species composition in birds embodies all the knowledge about how individual members of the community relate to and interact with one another to produce the patterns of resource allocation and spatial and temporal abundance among constituent species. Birds also live in association and form large flocks; thus, the concept of community structure came into existence in birds. The forests belt of Jammu harbours a wide diversity of avifaunal assemblage. The mixed forest and coniferous forests of Jammu furnished food sources suitable for different kinds of bird feeding guilds. Forests provide a wide

18. Mac Arthur, R.H. (1969). Patterns of communities in tropic. *Bio. J. Linn. Soc.*, 1: 1: 19-30.

19. Mac Arthur, R.H. and Mac Arthur, J.W. (1961). On bird species diversity. *Ecology*, 42: 592-598.

20. Miller, J.R., Dixon, M.D., Turner, M.G. (2004). Response of avian communities in large river floodplains to environmental variation at multiple scales. *Ecological Applications*, 14(5): 1394-1410.

21. Robinson, S.K. and Terborgh, J. (1990). Bird Communities of Cocho Cashu biological station in Amazonia Peru in the four neotropical forest. 199-216. Yak University Press, New Haven, CT.

22. Sale, J.B. and Berkmuller,K.(1988). Manual of Wildlife techniques for India, Food and Agricuiture Organization of United Nations, Dehradun.

23. Sharma, R.K. (2001). Avian diversity and vegetational association in four distinct habitat types in Haridwar. Ph.D. Thesis, Gurukul Kangri University Of Haridwar, India. Singh, 2004

24. Singh, A.P. (2004). Birds of lower Garhwal Himalayas Dehradun valley and neighbouring hills. *Forktail,* (16): 101:123.

25. Singh, R., Dev, K., Kour, D.N. and Sahi, D.N. (2014). Bird communities structure along with specie diversity, relative abundance and habitat use of tehsil Udhampur, Jammu and Kashmir, India. *International Journal of Pure and Applied Zoology*, 2(1): 26-40.

26. Thiollay, J.M. (1986). Structure compare du peuplement avian dans trios sites de forest primaire Guyane. *Rev. Ecol. (Terre et vie)*, 41: 59-105.

ISBN 978-93-93066-01-5

CHAPTER 11

Phytohaemagglutinins

Jasmeet Kour, Monika Hans, Hitesh Chopra, Renu Sharma, Breetha Ramaiyan, and Bharti Mittu

CONTENTS

11.1 INTRODUCTION

Phytohaemagglutinins (PHA) are the lectins found in red kidney beans, *Phaseolus vulgaris*, chemically belonging to carbohydrate-binding proteins (Banwell et al., 1983, 1985; Shi et al., 2007; Zhang et al., 2008). They are mainly present in seeds, and are toxic; therefore they are generally cooked at higher temperature for human consumption (*Eating Raw, Undercooked Dry Beans Can Be Unpleasant | Archives | Hpj.Com*, n.d.). Lectins can be defined as the proteins having more than two binding sites, which can form crosslinking and forms agglutinate with cells bearing the target carbohydrates (Mishra et al., 2019; Nathan Sharon, 2007; Nathan Sharon & Lis, 1997). Initially they were identified as compounds that agglutinate blood cells, so they were named accordingly.

Pharmacologically they induce cells to enter the mitotic cell division phase, which may be by acting as a cross-linker to cell surface receptors that are directly or indirectly involved in cell activation (Berchtold & Villalobo, 2014; Kennedy & Nager, 2006; Movafagh et al., 2011). Upon exposure of lymphocytes from mammals to PHA, the mitosis starts for T lymphocytes and can be applied in the form of T cell mitogen in human immunology. When PHA is injected to animal tissues, they are designated as harmful. The series of steps involving the cell activation, destruction, and infiltration

DOI: 10.1201/9781003178446-11

84

Nanotechnology Interventions in Food Packaging and Shelf Life

EDITED BY

Aamir Hussain Dar
Gulzar Ahmad Nayik

CRC Press
Taylor & Francis Group

88

Contents

13 Potential Risks, Health Safety Features, and Public Acceptance of Nanoparticles in Packaging

Monika Hans[1], Rosy Bansal[2], Gulzar Ahmad Nayik[3], Ioannis K. Karabagias[4], and Mohammad Javed Ansari[5]

[1]Department of Food Science & Technology, Padma Shri Padma Sachdev Govt. PG College for Women Gandhi Nagar, J&K, India
[2]Department of Food Processing & Engineering, GSSDGS Khalsa College Patiala, Punjab, India
[3]Department of Food Science & Technology, Govt. Degree College Shopian, J&K, India
[4]Department of Food Science & Technology, School of Agricultural Sciences, University of Patras, Agrinio, Greece
[5]Department of Botany, Hindu College Moradabad, (Mahatma Jyotiba Phule Rohilkhand University), Bareilly, UP, India

CONTENTS

13.1 INTRODUCTION

Nanotechnology is a technique of using particles at a scale of one billionth of a meter, and materials of less than 100 nm are known as nanomaterials. Thus, nanotechnology states that components/materials, assemblies, and manufacturing arrangements having size ranging from 1–100 nm are nanoparticles (Moraru et al., 2003).

DOI: 10.1201/9781003207641-16

88

About the Authors

Dr. Bharti Razdan Kampasi

Dr. Bharti retired as Associate Professor in Botany in the year 2020 from Higher Education Department Jammu and Kashmir. She qualified her M.Sc. and M.Phil in Botany from Kashmir University in 1980 and 1982 respectively. She has worked under the able guidance of Prof. P.Kachroo and Prof. S.S. Biron Cytomorphology of Ferns of Kashmir. Her work is published in national and international research journals and as book chapters. She was awarded Ph.D degree by Kashmir University in 1986. She has teaching experience of 35 years.

Dr. Veena Sumbria

Dr Veena Sumbria retired as Associate Professor in Botany from Higher Education Department, Jammu and Kashmir govt. She bagged the post matric National Scholarship in the year1976 on the basis of her meritorious results. She did her M.Sc in Botany University of Jammu in the year 1981, followed by qualifying the prestigious fellowship JRF in the year 1983. Later she also qualified NET in Life sciences in the year 1989. She accomplished her Ph.d under the able guidance of Prof (Dr) Namrata Sharma in the year 2018 as a late venture. Her research covered the reproductive biology of Tephrosia purpurea (Linn.) Pers., whereby she exposed a new and novel mechanism of autogamy. Her work has been published in national and international Journals of repute. She has teaching experience of 37 years.

Sania Hamid

She is Assistant Professor in Botany, J&K Higher Education Department,presently posted in Govt. PG College for Women Gandhi Nagar,Cluster University of Jammu. She has teaching experience of 13 years at undergraduate level. She was awarded a gold medal for qualifying M.Sc. Botany in 2004 by University of Jammu. She also qualified CSIR-UGC NET-JRF in 2006.

Our Distinguished Books Published on Practical Botany :

- Practical Botany (Microbes and Cryptogams) B.Sc. Sem. I by Dr. Bharti Razdan Kampasi, Sania Hamid
- Practical Botany (Gymnosperms, Taxonomy & Ecology) B.Sc. Sem. II by Dr. Bharti Razdan Kampasi, Dr. Veena Sumbria, Sania Hamid
- Practical Botany (Anatomy, Reproductive Biology & Ecology) B.Sc. Sem. III by Dr. Bharti Razdan Kampasi, Dr. Neeti Chhibber Sarna
- Practical Botany (Plant Physiology & Metabolism) B.Sc. Sem. IV by Dr. Bharti Razdan Kampasi, Dr. Shweta Sarpal
- Practical Botany (Cell Biology & Genetics) B.Sc. Sem. V by Dr. Bharti Razdan Kampasi, Dr. Anju Kaul
- Practical Botany (Economic Botany & Biotechnology) B.Sc. Sem. VI by Dr. Bharti Razdan Kampasi, Dr. Rahul Sharma

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
JALANDHAR • DELHI • BANGALORE • COCHIN • RANCHI
An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-90638-27-7

VINESH

Practical Botany (Gymnosperms, Angiosperms & Ecology) B.Sc.

29_22

Based on the syllabi of Undergraduate courses taught at Colleges and Universities of Jammu, Ladakh, C.U.J., G.C.W. Parade, Kashmir University, C. U. Srinagar and Himachal Pradesh

VINESH

Practical Botany

(Gymnosperms, Angiosperms & Ecology)

B.Sc. (Semester II) J.U., L.U., C.U.J., G.C.W. Parade, K.U., C.U.S.

B.Sc. (Ist Year) H.P.U.

Dr. Bharti Razdan Kampasi Dr. Veena Sumbria Sania Hamid

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982

کلسٹر یونیورسٹی آف جموں

جدید ادبی اُردو نصاب

(خصوصی مطالعہ مرزا غالبؔ اور محمد حسین آزادؔ)

(Special Study of Poet Mirza Ghalib and
Prose Writer Mohammad Hussain Aazad)

مرتب

ڈاکٹر جاوید اقبال مغل

قاسمی کتب خانہ

جدید ادبی اُردو نصاب

مرتب

ڈاکٹر جاوید اقبال مغل

Q
K.K.

JADEED ADABI URDU NEESAB

(Special Study of Poet Mirza Ghalib and
Prose Writer Mohammad Hussain Aazad)

SEMESTER V[TH] & VI[TH] (CBCS)

(DSE-02)

Course Code: 1URLDE0502 CREDITS: 5+1

(DSE-04)

Course Code: 1URLDE0602 CREDITS: 5+1

Dr. Javaid Iqbal Mughal

QASMI KUTUB KHANA
E-92, Abul Fazal Enclave, Okhla New Delhi-110025
Talab Khatikan, Jamia Masjid, Jammu Tawi 180001
Ph. +91-9797352280 | +91-1913593736
G-Mail: qasmikutubkhana0729@gmail.com
Email: info@qasmikutubkhana.store
website:- qasmikutubkhana.store

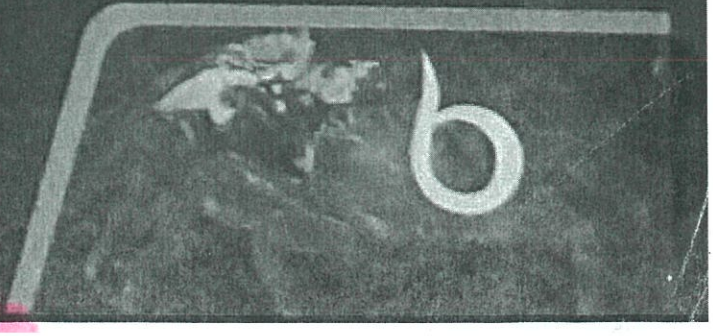
₹ 300/-

ISBN 978-93-5014-727-7

90

Ecobiology of Fresh Water Crabs from Jammu Waters (J&K) North India

Meenakshi Bandral



Ecobiology of Fresh Water Crabs from Jammu Waters (J&K) North India

by Dr. Meenakshi Bandral

This edition is published by Oberoi Book Service
Shop Number- 20 & 21/A-1,
Bahu Plaza Complex, Trikuta Nagar,
Jammu - 180002

ISBN: 978-93-93066-03-9

First Published 2022

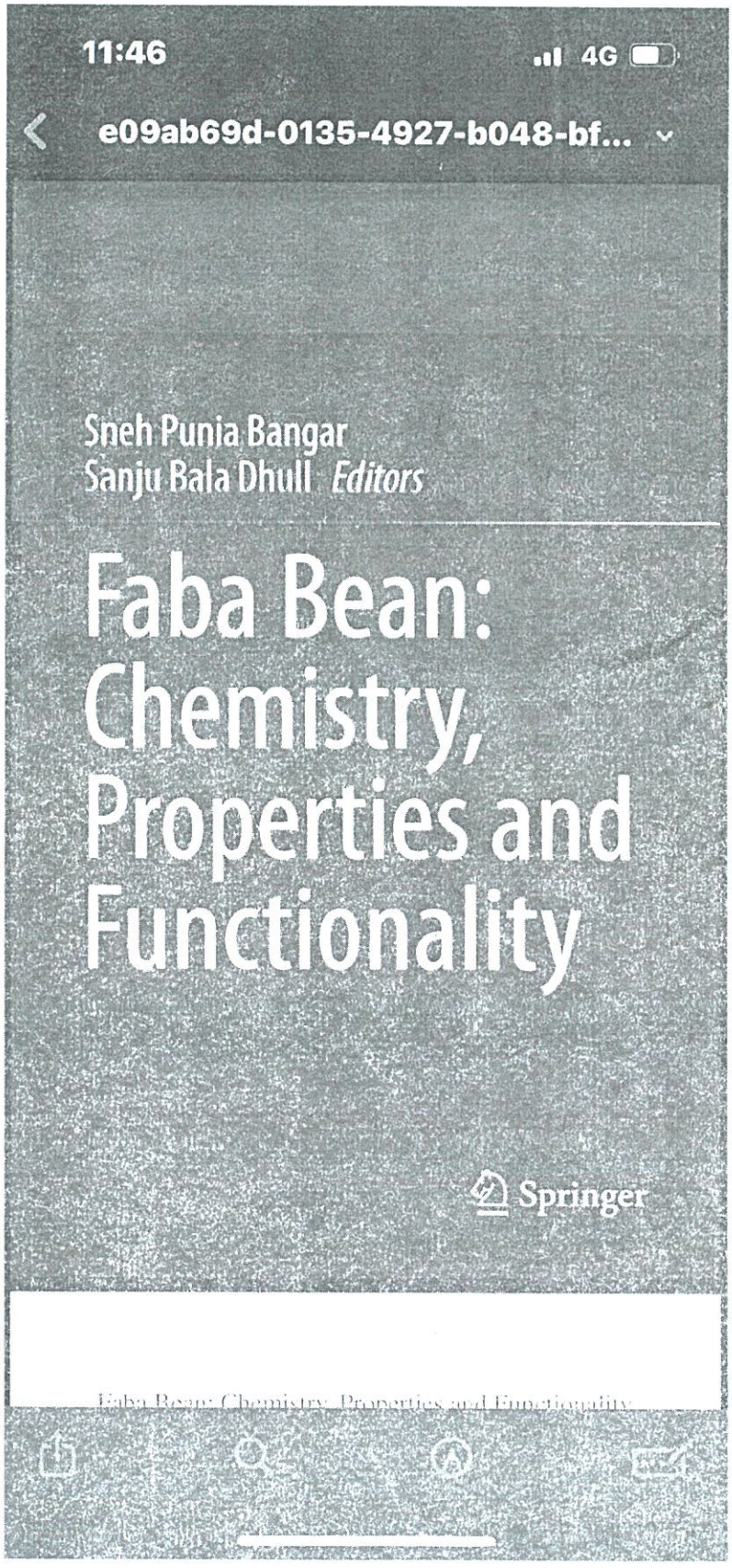
Printed and bound in India

OBEROI
BOOK SERVICE

Shop Number- 20 & 21/A-1,
Bahu Plaza Complex, Trikuta Nagar,
Jammu - 180002
Tel:- +(91)-191-2471723

92

14:37


11:46
4G
e09ab69d-0135-4927-b048-bf...
Sneh Punia Bangar
Sanju Bala Dhull Editors
Faba Bean: Chemistry, Properties and Functionality
Springer
Faba Bean: Chemistry, Properties and Functionality

Editors and Contributors

Peach

23

Monika Hans, Manzoor Ahmad Shah, and Rosy Bansal

Abstract

Peach (*Prunus persica*) belongs to Rosaceae family and believed to have originated in China 8000 years back, although it was thought that peach is native to Persia. Now it is grown in many temperature zones of the world between latitudes 30° and 45° North and South. The peach is round juicy fruit, which is yellow or furry red in colour with a fuzzy peel and has a large hard seed in centre. The shape of the fruit varies from beaked/ round to flat. Peaches are classified into two types—freestone and clingstones—depending upon the flesh sticking to the stones or not. The fruit can be eaten raw and processed into different products. It is highly nutritious with a lot of phytochemicals which are beneficial for health. Several studies have reported that these health beneficial characteristics are attributed to different bioactive components. The important bioactive compounds present in peach include phenolics, carotenoids and ascorbic acid. These compounds are responsible for antioxidant activity and thus helpful in preventing several diseases. The phenolic compounds that have been isolated and identified in peach fruits are categorized into anthocyanins, flavanols, phenolic acids and flavonols.

Keywords

Peach · Phytochemicals · Antioxidant activity · Phenolic acids · Anthocyanins

M. Hans (✉) · M. A. Shah
Govt. PG College for Women Gandhi Nagar, Jammu, Jammu & Kashmir, India

R. Bansal
GSSDGS Khalsa College, Patiala, Punjab, India

G. A. Nayik, A. Gull (eds.), *Antioxidants in Fruits: Properties and Health Benefits*,
https://doi.org/10.1007/978-981-15-7285-2_23

23.1 Introduction

Botanical Name *Prunus persica* (common name: Aurka)

Appraisal of Metal(loids) in the Ecosystem

Edited by
Vinod Kumar, Anket Sharma
Raj Setia

ELSEVIER

97

Contents

1

Overview of phytoremediation techniques for the assessment of metal(loid)s

Asma Javaid[a], **Nargis Nelofar**[b]

[a]*Department of Botany, GDC Udhampur (Boys), Udhampur, Jammu and Kashmir, India.* [b]*Department of Zoology, GCW Gandhinagar, Jammu, Jammu and Kashmir, India*

1.1 Introduction

Soil is the backbone of our agricultural system and has greatly contributed in green revolution and food safety (Lichtfouse and Eglinton, 1995; Sivarajasekar and Baskerr, 2014a, b, c). Healthy soil produces healthy crops that in turn nourish people. Maintenance of healthy soil requires a lot of effort from agriculturalists (Bots and Benites, 2005). Agriculture plays an important role in our country's Economy. In our country India, it contributes about 16% of total GDP and 10% of total exports (Goyal et al., 2016). However, during recent few years, pollution is posing a major threat to this growing agricultural development. It is caused due to rapid urbanization and industrialization; leading to contamination of agricultural lands with increasingly contaminated by organic, inorganic, and metallic pollutants (Pandey et al., 2019).

Heavy metal contaminated soil has become an environmental concern worldwide (Hasan et al., 2019). They are added from both natural as well as manmade sources. Natural sources include forest fire, volcanic eruption, wind erosion, and fossil fuels. Anthropogenic sources of heavy metals are thermal power plants, smelters, mines, refiners, foundries (Garty, 2001; Nagajyoti et al., 2010; Tangahu et al., 2011; Jaishankar et al., 2014a,b). These metals are not affected by any chemical method or microbial degradation and get accumulated for longer period of time, thus posing various risks to human health and environment (Bolan et al., 2014). Also, crop production is equally affected by heavy metal pollution (Bhat et al., 2019). Some of the toxic heavy metals include Aluminum (Al), Copper (Cu), Cadmium

Appraisal of Metal(loids) in the Ecosystem. DOI: https://doi.org/10.1016/B978-0-323-85621-8.00015-7

99

(Hossner et al., 1998). Aquatic macrophytes have 1,00,000 times greater capacity for accumulating heavy metals than the quantity of the associated water. Aquatic plants such as *Centella asiatica* and *Eichhornia crassipes* have the potential to accumulate different amount of copper from the contaminated areas (Mokhtar et al., 2011). These plant species are preferably grown in wetlands due to their fast growth rate and phytoaccumulation properties (Rai, 2008a, b). Nearly 97.3% and 99.6% of Cu had been found to be removed by *Eichhornia crassipes* and *Centella asiatica*, respectively (Mokhtar et al., 2011).

1.3.2 Phytostabilization

It is a process where certain plants are used to restrict the contaminants on the surface of contaminated sites. The mobility of contaminants is restricted by roots and root hairs either by accumulation into root surface or within the rhizosphere (Berti and Cunningham, 2000; Munshower et al., 2003; Mendez and Maier, 2008). It involves the immobilization of the contaminants, restricts their entry into the food chain, and thus lessens their chance of availability to other life forms. Phytostabilization restricts the movement of contaminants within the rhizosphere of the plants and thus the aerial parts of plants are protected from the entry of any contaminants (Berti and Cunningham, 2000; Alkorta et al., 2010). It helps to re-establish growth of certain tolerant plant species at contaminated sites with high metal concentrations where the possibility of natural vegetative growth is not feasible (Regvar et al., 2006). In order to limit the relocation of various metal contaminants by rain, wind, and leaching into the groundwater, various metal-tolerant plant species are grown on the contaminated sites which act as phytostabilizers. In addition to phytostablizers, there is diversity of microbiota associated with these plant species which assists their metal tolerance efficiency and growth. They also lessen the metal absorption and their transportation to aerial parts of plants by restricting their movement in the root surface area of the plant (Muthusaravanam et al., 2018). The plant-associated microbiota uses different mechanisms to prevent the metal adsorption in plants (Rouch et al.,1995; Cabot et al., 2019). These microbes restrict the heavy metal uptake by the following mechanisms:

i. The permeability barrier present outside the cell prevents metal entry into the cell.
ii. By supporting to extracellular polymers.
iii. By detoxifying the heavy metals to chemically less active forms.

The soil microbes play a significant role in the amplification of phytostabilization. Some beneficial microbes such as Rhizobium and Endophytes help in phytoremediation process by restricting the movement and rate of accumulation of heavy metal (Ma et al., 2011).

1.3.5 Rhizodegradation

It is also called as phytostimulation. This process involves the degradation of toxic organic pollutants by the activity of microbes within the rhizosphere (Mukhopadhyay and Maiti, 2010). Rhizospere is defined as the area of soil (about 1 mm) that immediately surrounds the root and is inhibited by the rich diversity of microbes that are influenced by root secretions (Pilon-Smits, 2005). Within the rhizosphere, the activity of soil microbes is influenced in the following ways:

i. Root secretions contain different amino acids and sugars that provide important nutrients to indigenous microbes.
ii. Roots assure the oxygen supply in rhizosphere for the aerobic respiration of microorganisms.
iii. Roots biomass increases the amount of organic carbon in the soil as a source of food to the soil microbes.
iv. Mycorrhizal fungi associated with roots degrade some compounds. Degradation of such compounds cannot be achieved by bacteria.
v. Plants also furnish site for increasing microbial biomass and root microbial community (Yadav et al., 2010).

Numerous plant species have been used for the rhizodegradation strategies. Among them, legumes and grasses are known to have higher efficiency (Vazquez-Luna et al., 2015). Rhizosphere-associated microbes are also known to enhance the degradation of contaminants by a symbiotic relation with plants. Plants secrete various exudates such as flavonoids, carbohydrates, and amino acids that are known to promote the microbial activity by 10–100 times (Weller and Thomashow, 2007). In addition to these exudates, plants discharge certain enzymes in the soil that can degrade soil pollutants (Liu, 2013).

1.4 Selection of plant species for phytoremediation

Remediation of soil using plants has major future potential. This green approach of using plants for the treatment of various pollutants can be used for resettlement of contaminated sites that can further be used for agriculture. However, only those plants that have high tolerance for contaminants can be used for this purpose. Phytoremediation efficiency of plant species depends on the following factors:

a. They have the adaptability to the contaminated areas.
b. They have the ability to uptake and tolerate the contaminants in different plant parts.

It is grown in wide ranges of salinity, acidity, and presence of heavy metals. It is used in the process of phytostabilization for sequestering Pb in roots (Xia, 2004). Formation of complexes between phytochelatins such as EDTA and Pb in Vetiver has been worked out by Andra et al. (2009). The complexes so formed make Vetiver a Lead tolerant species. Lead can also enhance the oil content of Vetiver (Rotkittikhum et al., 2010).

Lemongrass (*Cymbopogon flexuosous* or *C. citrates*)

Family: Poaceae.

Lemon grass uses Cadmium as inducer of Proline (Handique and Handique, 2009) and young leaves are major accumulators of proline. Lemongrass also help in photostabilization of toxic Cu tailings (Das and Maiti, 2009). It can also adsorb Pb (II) ions from aqueous solution (Sobh et al., 2014). Treatment of wastewater containing Pb(II) ions can be done by this low-cost and eco-friendly method. Factors such as translocation and bioconcentration proved that lemongrass acts as a phytostablizer of Cu, Fe, and Mn in roots and phytoaccumulator of Al, As, Cd, Cr, Pb, Ni, and Zn (Gautam et al., 2017).

Citronella (*Cymbopogon winterianus* Jowitt.)

Family: Poaceacae.

Citronella shows the highest accumulation of Cd in roots, followed by stem, leaf sheath. and leaves (Borunah et al., 2000). It can act as a potential phytostabilizer of heavy metals in contaminated area.

Palmarosa (*C. martini*)

Family: Poaceacae.

It shows phytostabilization potential in heavy metal rich sludge amended soil. Uptake of heavy metals is found in the following order Cr> Ni> Pb> Cd in both roots and shoots (Pandey et al., 2019).

Geranium (*Pelargonium* sps.)

Family: Geraniaceae.

Geranium can uptake high amount of lead in its biomass (Krishna Raj et al., 2001). Krishna Raj et al. registered a patent in which geranium was found as an effective hyper accumulator in multi-metal contaminated soil. The scented geranium can accumulate a greater amount of Cd and Ni because of different detoxification mechanisms (Dan et al., 2000) like keeping up a proficient photosystem II action, confining harm to photosynthetic mechanical assembly by metal particles, etc. However, it is vulnerable to toxicity of Cu followed by Cd, Ni, and Pb for herb, oil yield, and aggregation of metals in plant parts (Chand et al., 2016).

Mint (*Mentha* sps.)

Family: lamiaceae.

Menthe sps. Phytostablize the heavy metals when grown in contaminated areas and accumulated the respective toxic metal in roots with least transportation to the aerial plant parts (Pandey et al.,

2. Phytovoltilization transfers soil and groundwater pollutants into the air (Sakakibara et al., 2010).
3. It results in contaminated plant and plant products, which are not edible (Mejare and Bullow, 2001).
4. There is incomplete removal of toxic substances from the bioremediated areas (Garisu et al., 2002).
5. There is a risk of food chain contamination (Arthur et al., 2000).
6. It is time-consuming and lengthy process, which takes several growing seasons to restore the contaminated area (Stomp et al., 1994).

1.8 Future prospects and conclusions

Development comes with the man-made hazards and degradation of natural resources. One of these natural resources is soil, which is degrading every day. Restoration of healthy soil is key factor for the survival of life on earth. However, the present soil protections are not sufficient to achieve the sustainable soil management. Remediation of environment from various toxic metals can be achieved by many ways including phytoremediation. Moreover, the phytoremediation is cost-effective and eco-friendly. Plant species surviving in the contaminated soil have endurance to the prevailing stress due to presence of heavy metals. Such plants can be used to fulfill the objectives of pollution attenuation and biomass productivity. The rehabilitation of the polluted sites can be achieved by increasing the number of metallophytes at the abandoned mining sites and contaminated soils. They act to remediate soils in future without using artificial treatments. The use of perennial and annual metallophytes can provide a sustainable amount of organic matter and nutrients recycling. The only requirement, in this case, is proper information about the plants growing on metal contaminated soils.

References

Ali, H., Khan, E., Sajad, M.A., 2013. Phytoremediation of heavy metals—concepts and applications. Chemosphere 91, 869–881.

Alkorta, I., Becerril, J. M., Garbisu, C., 2010. Phytostabilization of metal contaminated soils. Rev. Environ. Health, 25 (2), 135–146.

Andra, S.S., Datta, R., Sarkar, D., Saminathan, S., Mullens, C.P., Bach, S.B., 2009. Analysis of phytochelatin complexes in the lead tolerant vetiver grass [Vetiveria zizanioides (L.)] using liquid chromatography and mass spectrometry. Environ. Pollut. 157 (7), 2173–2183.

Angelova, V.R., Grekov, D.E., Kisyov, V.K., Ivanov, K.I., 2015. Potential of lavender (Lavandula vera L.) for phytoremediation of soils contaminated with heavy metals. Int. J. Biol. Biomol. Agric. Food Biotechnol. Eng. 9, 465–472.

Arthur, E., Crews, H., Morgan, C., 2000. Optimizing plant genetic strategies for minimizing environmental contamination in the food chain: report on the MAFF

Gautam, M., Pandey, D., Agrawal, M., 2017. Phytoremediation of metals using lemongrass (Cymbopogon citratus (DC) Stapf.) grown under different levels of red mud in soil amended with biowastes. Int. J. Phytoremediation 19 (6), 555–562.
Ghosh, M., Singh, S.P., 2005. A review on phytoremediation of heavy metals and utilization of it's by products. Asian J. Energy Env. 6, 18.
Goyal, S.K., Prabha, Rai, J.P., Sing, S.R., 2016. Indian Agriculture and Farmers (pp. 79-87) Publisher: Poddar Publication, Chittupur.
Handique, G.K., Handique, A.K., 2009. Proline accumulation in lemongrass (*Cymbopogon flexuosus* Stapf.) due to heavy metal stress. J. Environ. Biol. 30 (2), 299–302.
Hasan, M.M., Uddin, M.N., Sharmeen, I.A., Alharby, H.F., Alzahrani, Y., Hakeem, K.R., Zhang, L., 2019. Assisting phytoremediation of heavy metals using chemical amendments. Plants (Basel); 8 (9), 295. http://doi.org/10.3390/plants8090295.
Hossner, L.R., Loeppert, R.H., Newton, R.J., Szaniszlo, P.J., 1998. Literature review: phytoaccumulation of chromium, uranium, and plutonium in plant systems. Amarillo National Resource Center for Plutonium, Amarill. http://doi.org/10.1016/S0269-7491(99)00141-4.
Jabeen, R., Ahmad, A., Iqbal, M., 2009. Phytoremediation of heavy metals: physiological and molecular mechanisms. Bot. Rev. 75, 339–364.
Jaishankar, M., Tseten, T., Anbalagan, N., 2014a. Toxicity, mechanism and health effects of some heavy metals. Interdiscip. Toxicol. 7, 60–72.
Jaishankar, M., Tseten, T., Anbalagan, N., Mathew, B.B., Beeregowda, K.N., 2014b. Toxicity, mechanism and health effects of some heavy metals. Interdiscip.Toxicol. 7 (2), 60–72. http://doi.org/10.2478/intox-2014-0009.
Jomjun, N., Siripen, T., Maliwan, S., 2010. Phytoremediation of arsenic in submerged soil by wetland plants. Int. J. Phytoremediat. 13, 35–46.
Kärenlampi, S., Schat, H., Vangronsveld, J., 2000. Genetic engineering in the improvement of plants for phytoremediation of metal polluted soils. Environ. Pollut. 107, 225–231.
Krishna Raj, S., Saxena, P.K., Perras, M.R., 2001. U.S. Patent No. 6,313,374. Washington, DC: U.S. Patent and Trademark Office.
Landmeyer, J.E., 2011. Introduction to Phytoremediation of Contaminated Groundwater: Historical Foundation, Hydrologic Control, and Contaminant Remediation. Springer Science and Business Media, Berlin/Heidelberg, Germany.
Lichtfouse, E., Eglinton, T., 1995. 13C and 14C evidence of pollution of a soil by fossil fuel and reconstruction of the composition of the pollutant. Org. Geochem. 23, 969–973.
Lili, L., Hui, S., 2007. Advance of research on phytoremediation of petroleum-polluted soil. Environ. ProtChemInd. 3, 11.
Liu, W., et al., 2013. Rhizobacteria (*Pseudomonas* sp. SB) assist phytoremediation of oily-sludge-contaminated soil by tall fescue (*Testuca arundinacea* L.). Plant Soil 371, 533–542.
Ma, Y., Prasad, M.N.V., Rajkumar, M., Freitas, H., 2011. Plant growth promotingrhizobacteria and endophytes accelerate phytoremediation of metalliferous soils. Biotechnol. Adv. 29, 248–258. https://doi.org/10.1016/j.biotechadv.2010.12.001.
Mahar, A., Wang, P., Ali, A., Awasthi, M.K., Lahori, A.H., Wang, Q., Li, R., Zhang, Z., 2016. Challenges and opportunities in thephytoremediation of heavy metals contaminated soils: a review. Ecotoxicol. Environ. Saf. 126, 111–121.
Malik, N., Biswas, A.K., 2012. Role of higher plants in remediation of metal contaminated sites. Sci. Revs. Chem. Commun. 2 (2), 141–146.
Marmiroli, N., McCutcheon, S.C., 2004. Making phytoremediation a successful technology. Phytoremediation 1, 85–119.
McGrath, S.P., Zhao, F.J., Lombi, E., 2002. Phytoremediation of metals, metalloids, andradionuclides. Adv. Agron. 75, 1–56.
Mejáre, M., Bülow, L., 2001. Metal-binding proteins and peptides in bioremediation and phytoremediation of heavy metals. Trends Biotechnol. 19, 67–73.

Rashid, A., Mahmood, T., Mehmood, F., Khalid, A., Saba, B., Batool, A., Riaz, A., 2014. Phytoaccumulation, competitive adsorption and evaluation of chelators-metal interaction in lettuce plant. Environ. Eng. Manage. J. 13 (10), 2583–2592.

Reeves, R.D., Baker, A.J.M., 2000. Metal-accumulating plants. In: Raskin, I., Finsley, B.D. (Eds.). Phytoremediation of Toxic Metals: Using Plants to Clean up the Environment, Wiley, New York, 193–229.

Rotkittikhun, P., Kruatrachue, M., Pokethitiyook, P., Baker, A.J., 2010. Tolerance and accumulation of lead in *Vetiveria zizanioides* and its effect on oil production. J. Environ. Biol. 31 (3), 329.

Rouch, D.A., Lee, B.T.O., Morby, A.P., 1995. Understanding cellular responses to toxic agents: a model for mechanism-choice in bacterial metal resistance. J. Ind. Microbiol. 14, 132–141.

Sakakibara, M., Watanabe, A., Inoue, M., 2010. Phytoextraction and phytovolatilization of arsenic from As-contaminated soils by Pteris vittata, Proceedings of the Annual International Conference on Soils, Sediments, Water and Energy, 26.

Sas-Nowosielska, A., Kucharski, R., Małkowski, E., 2004. Phytoextraction crop disposal—an unsolved problem. Environ. Pollut. 128, 373 379.

Schnoor, J.L., Licht, L.A., McCutcheon, S.C., Wolfe, N.L., Carreira, L.H., 1995. Phytoremediation of organic and nutrient contaminants. Environ. Sci. Technol. 29 (7), 318A–323A

Singh Ajay, W P, 2004. No Title: Applied Bioremediation and Phytoremediation. Springer, Berlin.

Sheoran, V., Sheoran, A., Poonia, P., 2011. Role of hyperaccumulators in phytoextraction of metals from contaminated mining sites: a review. Crit. Rev. Environ. Sci. Technol. 41, 168–214.

Sivarajasekar, N., Baskar, R., 2014a. Adsorption of basic red on activated waste *Gossypium hirsutum* seeds: process modeling, analysis and optimization using statistical design. J. Ind. Eng. Chem. 20, 2699–2709.

Sivarajasekar, N., Baskar, R., 2014b. Adsorption of basic magenta II onto H2SO4 activated immature Gossypium hirsutum seeds: kinetics, isotherms, mass transfer, thermodynamics and process design. Arab. J. Chem. http://doi.org/10.1016/j.arabjc.2014.10.040.

Sivarajaseka, rN., Baskar, R., 2014c. Adsorption of basic red onto activated carbon derived from immature cottonseeds: isotherm studies and error analysis, desalination and water treatment. Desalin. Water Treat. 52, 7743–7765.

Sobh, M., Moussawi, M.A., Rammal, W., Hijazi, A., Rammal, H., Reda, M., Hamieh, T., 2014. Removal of lead (II) ions from wastewater by using Lebanese Cymbopogon citratus (lemon grass) stem as adsorbent. Am. J. Phytomed. Clin. Ther. 2 (9), 1070–1080.

Stomp, A.M., Han, K.H., Wilbert, S., 1994. Genetic Strategies for enhancing phytoremediation. Ann. N Y Acad. Sci. 721, 481–491.

Tangahu, B.V., Sheikh Abdullah, S.R., Basri, H., 2011. A review on heavy metals (As, Pb, and Hg) uptake by plants through phytoremediation. Int. J. Chem. Eng. http://doi.org/10.1155/2011/939161.

Vázquez-Luna, D., 2015. Biological indices of toxicity in tropical legumes grown in oil-contaminated soil. Ecol. Indic. 53, 43–48.

Vidali, M., 2001. Bioremediation. An overview. Pure Appl. Chem. 73, 1163–1172.

Vijayalakshmi, V., Senthilkumar, V.P., Mophin-Kani, K., Sivamani, S., Sivarajasekar, N., Vasantharaj, S., 2018. Bio-degradation of Bisphenol A by *Pseudomonas aeruginosa* PAb1 isolated from efuent of thermal paper industry: kinetic modeling and process optimization. J. Radiat. Res. Appl. Sci. 11, 56–65.

Watanebe, M.E., 1997. Phytoremediation on the brink of commercialization. Environ. Sci. Technol. 31, 182A–186A.

Xia, H.P., 2004. Ecological rehabilitation and phytoremediation with four grasses in oil shale mined land. Chemosphere 54 (3), 345–353.

Chapter 6
Print ISBN: 978-93-5547-364-6, eBook ISBN: 978-93-5547-372-1

Use of Silica Supported Acid Catalyst in Organic Synthesis

Arora Revika [a*]

DOI: 10.9734/bpi/cacs/v9/3449E

ABSTRACT

The use of solid supported reagents is increasing, due to their tremendous potential to offer green chemical technologies. Now-a-days, silica supported acid catalysts have gained much importance due to their high activity. Moreover, silica-supported reagents are easy to handle, less toxic, can be easily separated and reused, due to which they may play important role both in academia and industries. Silicas generally require no pre-swelling, which makes their use far simpler. As oxidative bromination of alkenes is very important in synthesizing biologically and synthetically important dibromocompounds, a simple, efficient and cost effective method has been used for the bromination of alkenes by using SiO_2 -H_2SO as solid heterogeneous catalyst.
The objective of the study presented in this paper is to provide an environment friendly procedure for oxidative bromination of alkenes. Here, solid heterogeneous catalyst is used for synthesis of dibromo compounds.

Keywords: Solid supported reagents; oxidative bromination; alkenes; dibromocompounds; heterogeneous conditions.

1. INTRODUCTION

Bromination is a useful reaction in organic synthesis as these compounds are very important particularly in the preparation of different β–blocker, such as adrenoceptor agonists SR-58611A, denopamine, tembamide, formoterol, salmetrol etc. and in the manufacture of dyes, flame retardants, pharmaceuticals and agrochemicals [1,2,3]. Brominated organic substrates are known to posses potent antitumour, antifungal, antibacterial, antineoplastic and antiviral activities [4]. Dibromoalkanes have also been used as precursors of pesticides, gasoline additives and synthetic building blocks [5].

These have been used to synthesise alkynes , which are useful functional groups in organic reactions [6-11].

Bromination with molecular bromine is one of the most widely and extensively studied reactions. Molecular Bromine is very toxic and has corroding nature. One bromine atom is obtained in product whereas the other bromine atom forms HBr which is corroding in nature and has to be neutralized [12,13,14]. Thus, bromination with molecular bromine may be qualified as environmentally unfriendly reaction [15]. Environment friendly bromination protocols have been developed in place of use of bromine [16].

Various reagents have been reported for the bromination of alkenes such as V(V)-H_2O_2 , LiBr and CuBr, silica-pyridinium hydrobromide perbromide, tetrabutylammonium tribromide (TBATB), zinc bromide and leadtetracetate, benzyl trimethylammonium tribromide (BTMA Br_3), bromine and tetraethyl ammonium bromide, sodium bromide in the presence of sodium perborate [17-25].

However, some of these methods suffer from various drawbacks like insolubility of the metal bromides and the oxidising agents in non-aqueous solvents, long reaction times, polymerization of the alkene with the reagents and limited application to alkenes that are not affected by acids and aqueous media.

[a] *Government PG College for Women, Gandhi Nagar, Jammu, J&K, India.*
**Corresponding author: E-mail: arorarevika@rediffmail.com;*

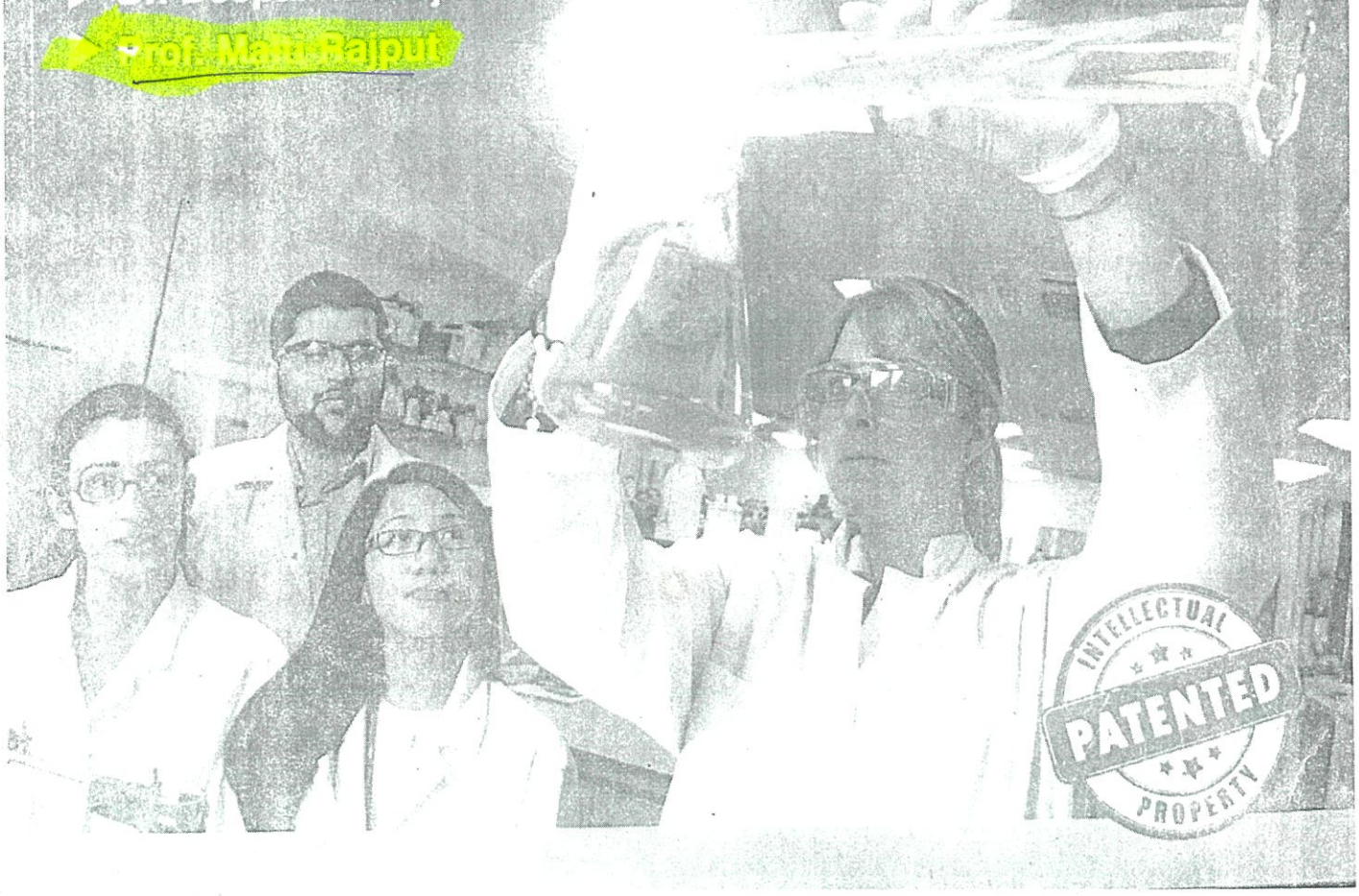
Department of Chemistry MALTI RAJPUT M

SKILL ENHANCEMENT COURSE

INTELLECTUAL PROPERTY RIGHTS (IPR) AND BUSINESS SKILLS FOR CHEMISTS

According to syllabus of
Cluster University of Jammu

- Dr. Rabia Javed
- Dr. Deepali Mahajan
- Prof. Malti Rajput



MALHOTRA BROTHERS
PACCA DANGA, JAMMU

9 788194 022244

108

SKILL ENHANCEMENT COURSE

INTELLECTUAL PROPERTY RIGHTS (IPR) AND BUSINESS SKILLS FOR CHEMISTS

According to syllabus of Cluster University of Jammu

By

Dr. Rabia Javed
Ph.D.
Assistant Professor
GGM Science College Jammu

Dr. Deepali Mahajan
Ph.D, M.Sc./B.Sc Gold Medalist, NET/SLET/GATE
Assistant Professor
GGM Science College Jammu

Prof. Malti Rajput
M.Phil
Assistant Professor
G.C.W Gandhi Nagar Jammu

MALHOTRA BROTHERS
EDUCATIONAL PUBLISHERS
PACCA DANGA, JAMMU

CONTENTS

Sania Hamid & Meenakshi Sharma

MODERN'S

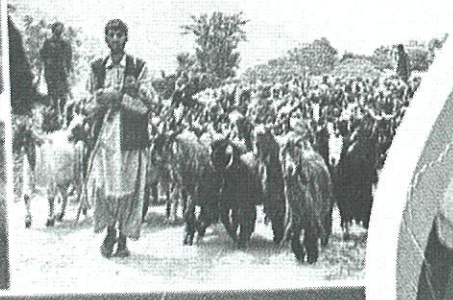
BOTANY

ETHNOBOTANY

UBOTS 403
B.Sc. PART-II, SEMESTER-IV
(JAMMU UNIVERSITY)

&

1BOTSE0602
B.Sc. PART-III, SEMESTER-VI
(CLUSTER UNIVERSITY, JAMMU)



SANIA HAMID
MEENAKSHI SHARMA
ANITA GUPTA

112

Contents

113

I Unit

ETHNOBOTANY

Introduction and concept of Ethnobotany. The word Ethnobotany has been derived from two Greek words, 'Ethno' meaning 'people or race' and 'Botany' meaning 'study of plants'; so ethnobotany means the study of plants used by various ethnic groups for different purposes. Ethnobotany is a branch of Ethnobiology which is a broader discipline. Earlier the term 'aboriginal botany' coined by Stephan Powers, 1875 was used for such studies. The term 'Ethnobotany' was coined by John W Harshberger in 1895 during his lecture at University of Pennsylvania. In 1940 Richard Evans Schultes carried out extensive ethnobotanical work in the Amazon and he is referred to as 'the father of ethnobotany'. In India, Ethnobotanical research was initiated by Dr. S.K. Jain (1980) and he is known as 'the father of Indian ethnobotany'.

Some important definitions of Ethnobotany are:

- The study which deals with the utilization of plants by primitive and aboriginal people. (Harshberger, 1895)
- The study of interaction between primitive humans and plants. (Jones, 1941)
- The relationship which exists between people of primitive societies and their plant environment is called ethnobotany. (Schultes, 1962)
- All the studies which describe the interactions between local people and natural environment, regarding plants. (Martin, 1995)
- Study of total natural and traditional interrelationships between man and plants. (Jain, 2001).

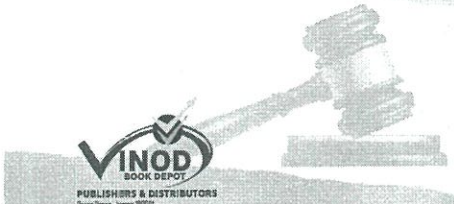
History of Development of Ethnobotany as a discipline. Human beings have been using plants since times immemorial for various purposes but ethnobotany as a discipline has evolved only recently. The history of ethnobotany can be traced back to the Paleolithic age when human beings started passing on of plant lores from one generation to another. After this period written records of plant uses have been found around Neolithic age. The usage of plants and plant parts by early human societies led to development of folk taxonomy (naming and classification of plants) accordingly.The earliest written records of ethnobotany refers mainly to the medicinal plants and some agricultural plants in ancient China, Egypt, India and Mesopotamia.The documented applications of plants have been found in Babylon circa 1770 BC and in ancient Egypt circa 1550 BC.In ancient India uses of plants as medicine are found in various scriptures dating back to the Vedic period (1500-500 BC).

In ancient China the lists of medicinal plants date back to around 481-221 BC. The Han Dynasty (202 BC-220 AD) includes the notable work of pharmacologist Zhang Zhongjing. A full synthesis of Greek pharmacology was compiled in De Materia Medica having details of over 600 medicinal plants around 60 AD by Pedanius Discoroides who was a Greek physician with the Roman army. Many other texts emphasizing use of plants were written from 9th to 13th centuries; the landmark

INDIAN GOVERNMENT AND POLITICS

About The Author

S.Paramjeet Singh is presently teaching at PS PS Government (PG) College for Women, Gandhi Nagar, Jammu. He completed his master's degree in Political Science from the University of Jammu. He has qualified for NET-JRF (UGC). He has teaching experience of 12 years. His first appointment was a lecturer in the School Education Department, Government of J&K, where he served in GHSS, Gota, GBHSS, Kargil, DIET Jammu, and GGHSS Shastri Nagar Jammu from 2010 to 2017. He served as Assistant Professor in GDC Jindrah from 2017 to 2020. He remained as part of the content finalization committee for the development of History /Geography /Political Science textbooks JKBOSE Jammu..



VINOD BOOK DEPOT
PUBLISHERS & DISTRIBUTORS

Price ₹ 200.00

ISBN: 978-81-961296-6-8

9788196129668

VK

Indian Government and Politics SEMESTER - II S.Paramjeet Singh

VK

According to the Syllabus Prescribed by University of Jammu
(AS PER NEP - 2020)

INDIAN GOVERNMENT AND POLITICS

SEMESTER - II

MAJOR : INDIAN GOVERNMENT AND POLITICS/UMJPST-201
MINOR : UNDERSTANDING INDIAN GOVERNMENT/UMIPST-202

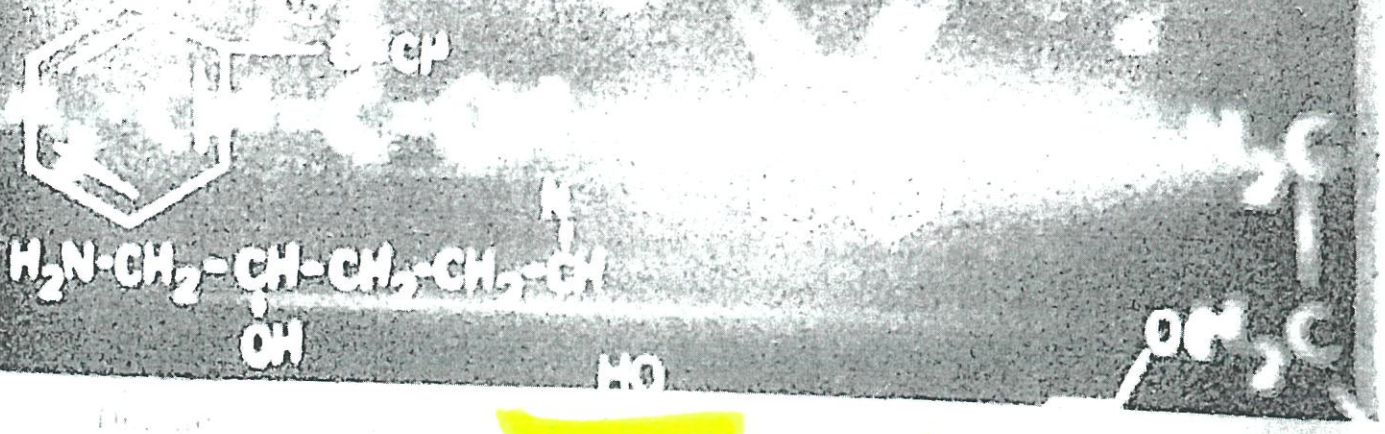
S. Paramjeet Singh

VINESH

Foundation Course in Chemistry-II

(Major / Minor)

B.Sc. SEMESTER - II (Jammu University)



M.Sc., Ph.D., NET
Asstt. Professor of Chemistry
Govt. M.A.M. College, Jammu.

M.Sc., Ph.D., NET
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

M.Sc., Ph.D., NET, GATE
Dept. of Chemistry
GCW, Parade, Jammu.

2024

S. VINESH & Co.

Sister Concern :

S. BINESH & Co.

since 1982

• JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

116

PRINTING HISTORY
1st Edition : March, 2023

ISBN 978-81-959299-3-1

Price ₹ 185/-

IMPORTANT NOTE

Due to huge demand of our different books some duplicate copies of our books have been published by the duplicators. To protect you against these duplicate, counterfeit fare books, we have put a hologram sticker on the title cover of the original/genuine books. This hologram bears our logo in the front layer and our trade mark VINESH in the second layer and when viewed at certain angles it gives multiple color effect. Readers are cautioned not to buy any such book which does not bear the said hologram. The book without this hologram may be spurious one and anyone having this book can be sued under law. Readers are requested that they shall inform the publishers about the booksellers selling duplicate books which do not bear any hologram stickers on them. In the event of this information being correct, the informer shall be richly awarded and his/her name shall also be kept confidential.

OUR ADDRESSES IN INDIA :

Jalandhar City : Near Sita Mandir, Circular Road, Mai Hiran Gate, **Jalandhar**–144008
Ph.: (0) 0181– 4606107, 08, 09, 7710711711 website : sdineshonline.in, e-mail : sdineshandco@gmail.com

New Delhi : 4265, Gali No. 3, Mohalla Panjabian, Ansari Road, Darya Ganj, **Delhi**
Ph.: 011–23250628, 23250058, e-mail : sdineshdelhi@gmail.com

Bengaluru : No. 60, 2nd Main, 11th Cross, Vittal Nagar, **Bengaluru**
Ph.: 080–26755085, e-mail : sdineshbengaluru@rediffmail.com

Ranchi : South Samaj Street, Beside Shiv Complex, H. B. Road, Tharpakhana, **Ranchi–1**
Ph.: 0651-2211334 e-mail : sdineshandcoranchi@gmail.com

Cochin : 41/161, Ammankovil Road, Near KSRTC, **Ernakulam**–682035
Ph.: 0484-4851453 e-mail : sdineshcochin@gmail.com

DISCLAIMER

The contents in this book have been obtained from sources believed to be authentic. However, neither the Publishers nor its authors guarantee the accuracy or completeness of any information published herein. It is notified that the publishers and its authors shall not be responsible for any errors, omissions or damage arising out of the use of the information contained in the book. This book has been published with the understanding that the publisher and its authors are just supplying information and not rendering professional services. For binding mistakes, misprints or missing pages in the book, the publishers responsibility is limited to replace the book by similar edition within one month of its purchase.

Published by : Vinesh Jain, S. Vinesh & Co., Near Sita Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph.: 0181–4606107, 08, 09, 7710711711
Printed at : Convenient Printers, Mubarkpur Sheikh, Jalandhar

117

Contents

[illegible]hed Books as per NEP for Jammu University, [illegible] Parade and Cluster University of Jammu

For Semester II

Chemistry

- [illegible]se in Chemistry – II (Major / Minor) (J.U.) — For Sem. II
- [illegible]n Foundation Course Chemistry – II (Major / Minor) (J.U.) — For Sem. II
- [illegible] Chemistry – II (Major / Minor) (C.L.U.J.) — For Sem. II

Physics

- Vinesh A Text [illegible] of Electrostatics & Magnetism (Major) (J.U.) — For Sem. II
- Vinesh A Text Book of Electromagnetism (Minor) (J.U.) — For Sem. II
- Vinesh Practical Manual in Electricity & Magnetism (Major / Minor) (J.U., G.C.W.) — For Sem. II
- Vinesh Mechanics, Oscillations & Relativity (Major / Minor) (C.L.U.J.) — For Sem. II
- Vinesh Vector Calculus, Electrostatics & Electromagnetic Waves (G.C.W.) — For Sem. II

Botany

- Vinesh Economic Botany & Plant Conservation (Major / Minor) (J.U.) — For Sem. II
- Vinesh Practical Botany – II (Economic Botany & Plant Conservation) (Major / Minor) (J.U.) — For Sem. II
- Vinesh Biofertilizers (Skill) (J.U.) — For Sem. II
- Vinesh Cell Biology (Major / Minor) (C.L.U.J.) — For Sem. II
- Vinesh Mushroom Cultivation – II (Skill) (C.L.U.J.) — For Sem. II

Zoology

- Vinesh Basics in Cell Biology (Cytology) (Major / Minor) (J.U.) — For Sem. II
- Vinesh Practical Manual in Basics in Cell Biology (Cytology) (Major / Minor) (J.U.) — For Sem. II
- Vinesh Medical Parasitology (Skill) (J.U.) — For Sem. II
- Vinesh Cell Biology (Major / Minor) (C.L.U.J.) — For Sem. II
- Vinesh Ornamental Fishes and Aquarium Making – II (Skill) (C.L.U.J.) — For Sem. II

Mathematics

- Vinesh A Text Book of Integral Calculus & Diff. Equations (Major / Minor) (J.U., C.L.U.J. & G.C.W.) — For Sem. II
- Vinesh Excellent Integral Calculus & Diff. Equations (Fully Solved) (Major / Minor) (J.U., C.L.U.J. & G.C.W.) — For Sem. II

Political Science

- Vinesh Indian Government & Politics (Major / Minor) (J.U.) — For Sem. II

Value Added Course

- Vinesh Environment Science & Education (Value Added Course) (J.U.) — For Sem. I & II
- Vinesh Environmental Education (Value Added Course) (J.U.) — For Sem. I & II
- Vinesh Understanding India (Value Added Course) (J.U., C.U.S.) — For Sem. I & II
- Vinesh Understanding India – I (Value Added Course) (C.L.U.J.) — For Sem. I & II
- Vinesh Health & Wellness (Value Added Course) (J.U., C.L.U.J., K.U., C.U.S., G.C.W.) — For Sem. I & II
- Vinesh Digital & Technological Solutions (Value Added Course) (J.U., C.L.U.J., K.U., C.U.S., G.C.W.) — For Sem. I & II

I.S.B.N. No. 978-81-959299-3-1

9 788195 929931

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

JALANDHAR · DELHI · BANGALORE · COCHIN · RANCHI

An ISO 9001 : 2015 Certified Company

Buy Our Books at www.sdineshonline.in | amazon

All Leading Bookstores

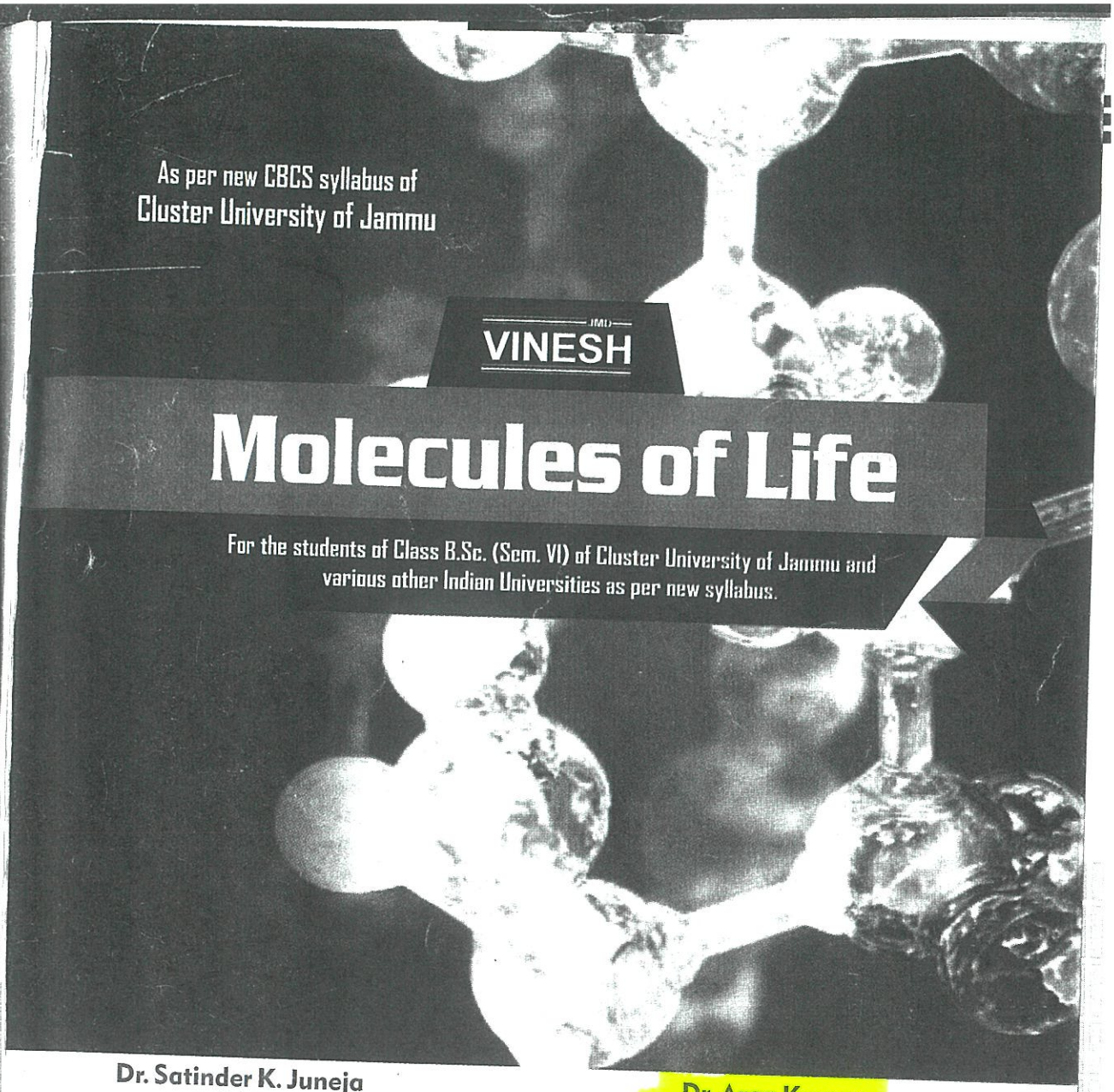
Follow us on S.Vinesh Co & S.Dinesh Co | svinesh_sdinesh.books | S.Vinesh & Co. (S.Dinesh & Co.)

As per new CBCS syllabus of
Cluster University of Jammu

VINESH

Molecules of Life

For the students of Class B.Sc. (Sem. VI) of Cluster University of Jammu and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
G.G.M. Science College, Jammu.

2020

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
• JALANDHAR• DELHI• BENGALURU• COCHIN• RANCHI

121

CONTENTS

122

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester I to VI)

Chemistry

- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (J.U. & G.C.W. Parade) — For Sem. I
- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Cluster University) — For Sem. I
- Vinesh Practical Chemistry (Including Lab Manual) (J.U., CLU & G.C.W. Parade) — For Sem. I
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. II
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (CLU) — For Sem. II
- Vinesh Practical Chemistry (Including Lab Manual) (J.U., CLU & G.C.W. Parade) — For Sem. II
- Dinesh Fuel Chemistry & Chemistry of Cosmetics & Perfumes (Skill) (CLU) — For Sem. II
- Dinesh Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. III
- Dinesh Functional Group Organic Chemistry IV, Solutions, Phase Equilibrium, Electrochemistry & States of Matter-I (Cluster University) — For Sem. III
- Dinesh Cosmetics, Perfumes and Medicinal Agents from Natural Sources (Skill Enhancement Course) — For Sem. III
- Dinesh Fuel Chemistry (Skill) (G.C.W. Parade) — For Sem. III
- Vinesh Practical Chemistry (Including Lab Manual) (J.U., CLU & G.C.W. Parade) — For Sem. III
- Dinesh Coordination Chemistry, States of Matter & Chemical Kinetics (J.U. & GCW Parade) — For Sem. IV
- Dinesh States of Matter-II, Chemical Kinetics & Coordination Chemistry (CLU) — For Sem. IV
- Dinesh Pesticide Chemistry (Skill Enhancement Course) — For Sem. IV
- Vinesh Practical Chemistry (Including Lab Manual) (J.U., CLU & G.C.W. Parade) — For Sem. IV
- Dinesh Spectroscopy, Photochemistry and Organo Metallics and Bioinorganic Chemistry (J.U. & G.C.W. Parade) — For Sem. V
- Dinesh Quantum Chemistry, Spectroscopy & Photochemistry (CLU) — For Sem. V
- Dinesh Fuel Chemistry (Skill Enhancement Course) (CLU) — For Sem. V
- Vinesh Practical Chemistry (Including Lab Manual) (J.U., CLU & G.C.W. Parade) — For Sem. V
- Vinesh Inorganic Materials of Industrial Importance (CLU) — For Sem. V
- Dinesh Inorganic Materials of Industrial Importance & Organic Spectroscopy (J.U., G.C.W. Parade) — For Sem. VI
- Vinesh Practical Chemistry (Including Lab Manual) (J.U.) — For Sem. VI
- Vinesh Practical Chemistry (Including Lab Manual) (G.C.W. Parade) — For Sem. VI
- Vinesh Molecules of Life (CLU) — For Sem. VI
- Vinesh Practical Chemistry (Molecules of Life) (Including Lab Manual) (CLU) — For Sem. VI

Endeavour for Excellence, Delight & Value

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

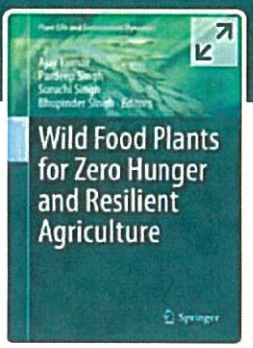
since 1982

JALANDHAR DELHI* BANGALORE* COCHIN* RANCHI

An ISO 9001 : 2015 Certified Company

ISBN 978-93-89800-21-0

123



Wild Food Plants for Zero Hunger and Resilient Agriculture
pp 317–329 | Cite as

Databases Relevant to Wild Food Plants

Sushil Kumar, Swarn Singh, ... Ajay Kumar

+ Show authors

Chapter | First Online: 04 April 2023

Part of the Plant Life and Environment Dynamics book series (PLED)

Abstract

Wild food plants are important for human beings. Their beneficial effects are due to the multiple ingredients of these plants. Besides nutrients, recent evidence also suggests that

Kumar, S., Singh, S., Mushtaq, F., Kumar, A. (2023). Databases Relevant to Wild Food Plants. In: Kumar, A., Singh, P., Singh, S., Singh, B. (eds) Wild Food Plants for Zero Hunger and Resilient Agriculture. Plant Life and Environment Dynamics. Springer, Singapore. https://doi.org/10.1007/978-981-19-6502-9_13

Download citation

.RIS .ENW .BIB

DOI
https://doi.org/10.1007/978-981-19-6502-9_13

Published
04 April 2023

Publisher Name
Springer, Singapore

Print ISBN
978-981-19-6501-2

Online ISBN
978-981-19-6502-9

eBook Packages
Biomedical and Life Sciences
Biomedical and Life Sciences (R0)

References

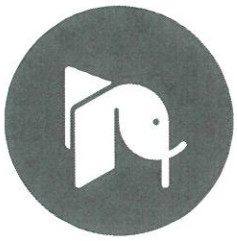
Abbet C, Mayor R, Roguet D, Spichiger R, Hamburger M, Potterat O (2014) Ethnobotanical survey on wild alpine food plants in Lower and Central Valais (Switzerland). J Ethnopharmacol 151(1):624–634. https://doi.org/10.1016/j.jep.2013.11.022. Epub 2013 Nov 20. PMID: 24269246

CrossRef PubMed Google Scholar

Ahmad K, Pieroni A (2016) Folk Knowledge of wild food plants among the tribal communities of Thakht-e-Sulaiman Hills, North-West Pakistan. J Ethnobiol Ethnomed 12:17

CrossRef PubMed PubMed Central Google Scholar

Bharucha Z, Pretty J (2010) The roles and values of wild foods in agricultural systems.



OPEN ACCESS PEER-REVIEWED CHAPTER - ONLINE FIRST

Role of Absisisic acid in Plant stress

Submitted: June 12th, 2023 , Reviewed: June 16th, 2023 , Published: September 1st, 2023

DOI: 10.5772/intechopen.1002392

WRITTEN BY
Rahul Sharma and Priyanka Sharma

New Insights Into Phytohormones [Working Title]

Dr. Basharat Ali

Abstract

The multifaceted role of Abscisic acid (ABA) as a phytohormone of great repute cannot be overstated. ABA right after its synthesis within plastids embark on a quest to find specific receptors. On binding these receptors a complex signaling cascade is triggered that ultimately modulates gene expression and other cellular processes, responsible for normal growth and development processes of plants. Under abiotic and biotic stresses ABA levels change tremendously, triggering a cascade of physiological responses that help the plant adapt to its environment. A deeper understanding of ABA's mechanisms like understanding its metabolic pathways or its regulation at genetic and epigenetic levels hold the promise of enhancing crop productivity and resilience in the face of the daunting challenges posed by a changing climate. Use of gene editing techniques like CRISPER-Cas technology, regulating the ABA mediated stress responsive genes, using RNAi and modifying the intragenic and promoter regions of the genes involved in ABA biosynthesis are a few methods which can enhance the ABA production or ABA mediated response to tolerate the stress conditions. In essence, ABA is a paramount player in plant stress responses, and unlocking its mysteries holds the potential to revolutionize agriculture and safeguard food security.

Keywords

abscisic acid | phytohormone | abiotic stress | epigenetic changes | stress tolerance | transcription factor

Author Information Show +

Chapter sections

1. Introduction

The continuously growing world population is expected to reach about six billion by 2050. This situation may pose a significant challenge to meet the increasing food demands by ou ıdy struggling agriculture industry ( ). Factors such as water scarcity, soil degradation, and a variety of biotic and abiotic stresses further worsen the situation, affecting agricultural productivity.

128

As per new Syllabus of
Jammu University

JMD
VINESH

Engineering Chemistry Lab

(Including Lab Manual)

B.E. (Semester I & II)

Dr. Aran Kumar

Dr. Sumit Sanotra

PRINTING HISTORY

1st Edition : May, 2019
2nd Edition : Jan., 2020

I.S.B.N. No. 978-93-88976-14-5

Price { ₹ 165/-

IMPORTANT NOTE

Due to huge demand of our different books, some duplicate copies of our books have been published by the duplicators. To protect you against these duplicate/counterfeit/fake books, we have put a hologram sticker on the title cover of the original/genuine books. This hologram bears our logo in the front layer and our trade mark VINESH in the second layer and when viewed at certain angles it gives multiple color effect. Readers are cautioned not to buy any such book which does not bear the said hologram. The book without this hologram may be spurious one and anyone having this book can be sued under law. Readers are requested that they shall inform the publishers about the booksellers selling duplicate books which do not bear any hologram stickers on them. In the event of this information being correct, the informer shall be richly awarded and his/her name shall also be kept confidential.

OUR ADDRESSES IN INDIA :

Jalandhar City : Near Sitla Mandir, Circular Road, Mai Hiran Gate, **Jalandhar**–144008
Ph.: (0) 0181– 4606108, 09, 11, 7710711711 website : sdineshonline.in, e-mail : sdineshandco@gmail.com

New Delhi : 4265, Gali No. 3, Mohalla Panjabian, Ansari Road, Darya Ganj, **Delhi**
Ph.: 011–23250628, 23250058, e-mail : sdineshdelhi@gmail.com

Bengaluru : No. 60, 2nd Main, 11th Cross, Vittal Nagar, **Bengaluru**
Ph.: 080–26755085 e-mail : sdineshbengaluru@rediffmail.com

Ranchi : South Samaj Street, Beside Srilok Complex, H. B. Road, Tharpakhana, **Ranchi–1**
Ph.: 0651-2211334 e-mail : sdineshandcoranchi@gmail.com

Cochin : 41/161, Ammankovil Road, Near KSRTC, **Ernakulam**–682035
Ph.: 0484-4851453 e-mail : sdineshcochin@gmail.com

DISCLAIMER

The contents in this book have been obtained from sources believed to be authentic. However, neither the Publishers nor its authors guarantee the accuracy or completeness of any information published herein. It is notified that the publishers and its authors shall not be responsible for any errors, omissions or damage arising out of the use of the information contained in the book. This book has been published with the understanding that the publisher and its authors are just supplying information and not rendering professional services. For binding mistakes, misprints or missing peges in the book, the publishers responsibility is limited to replace the book by similar edition within one month of its purchase.

Published by : Vinesh Jain, Near Sitla Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph.: 0181–4606108, 09, 11, 7710711711
Printed at : Convenient Printers, Mubarkpur Sheikh, Jalandhar

Contents

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester I & II)

Chemistry

- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (J.U. & G.C.W. Parade) — For Sem. I
- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Cluster University) — For Sem. I
- Vinesh Practical Chemistry (J.U., C.L.U. & G.C.W. Parade) — For Sem. I
- Vinesh Practical Biochemistry & Cell Biology — For Sem. I
- Vinesh Engineering Chemistry Theory — For B.E. Sem. I & II
- Vinesh Engineering Chemistry Lab — For B.E. Sem. I & II
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. II
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (Cluster University) — For Sem. II
- Vinesh Practical Chemistry (J.U., C.L.U. & G.C.W. Parade) — For Sem. II
- Dinesh Fuel Chemistry & Chemistry of Cosmetics & Perfumes (SEC) (Cluster University) — For Sem. II

Physics

- Vinesh Mechanics, Oscillations & Relativity (J.U. & G.C.W. Parade) — For Sem. I
- Vinesh Mechanics, Oscillations & Relativity (Cluster University) — For Sem. I
- Vinesh Vector Calculus, Electrostatics and Electromagnetic Waves (J.U. & G.C.W. Parade) — For Sem. II
- Vinesh Electricity and Magnetism (Cluster University) — For Sem. II

Botany

- Vinesh Diversity of Microbes & Cryptogams (J.U. & G.C.W. Parade) — For Sem. I
- Vinesh Diversity in Microbes, Algae, Fungi and Archegoniates (Cluster University) — For Sem. I
- Dinesh Characteristics and Systematics of seed plants (J.U. & G.C.W. Parade) — For Sem. II
- Vinesh Gymnosperms, Taxonomy & Plant Ecology (Cluster University) — For Sem. II

Zoology

- Vinesh Animal Diversity (J.U., C.L.U. & G.C.W. Parade) — For Sem. I
- Vinesh Comparative Anatomy and Developmental Biology of Vertebrates — For Sem. II

Mathematics

- Vinesh Differential Calculus (J.U., C.L.U. & G.C.W. Parade) — For Sem. I
- Vinesh Excellent Differential Calculus (Fully Solved) (J.U., C.L.U. & G.C.W. Parade) — For Sem. I
- Vinesh Differential Equations (J.U., C.L.U. & G.C.W. Parade) — For Sem. II
- Vinesh Excellent Differential Equations (Fully Solved) (J.U., C.L.U. & G.C.W. Parade) — For Sem. II

Endeavour for Excellence... Driven by Values

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

JALANDHAR · DELHI · BANGALORE · COCHIN · RANCHI

An ISO 9001 : 2015 Certified Company

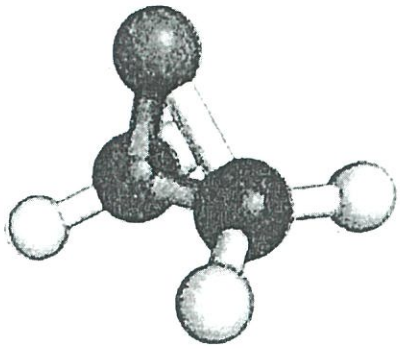
I.S.B.N. No. 978-93-88976-14-5

9 789388 976145

JAS-ANZ

ISO 9001 Registered

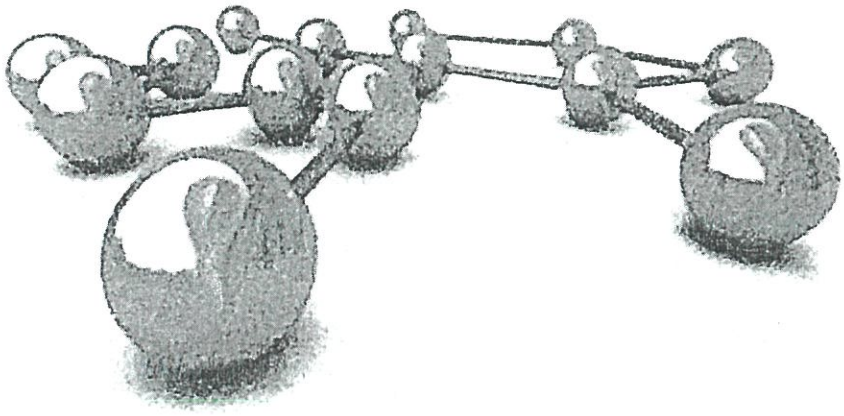
As per new CBCS Syllabus of
Cluster University of Jammu



JMD
DINESH

Functional Group Organic Chemistry-IV, Solutions, Phase Equilibrium, Electrochemistry & States of Matter-I

For the students of Class B.Sc. (Sem. III) of Cluster University of Jammu and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Asstt. Professor of Chemistry
Govt. M.A.M. College, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

Dr. Yash Paul
M.Sc., Ph.D.
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

2023

since 1982

S. DINESH & Co.

Sister Concern : S. VINESH & Co.

•JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

PRINTING HISTORY

1st Edition : July 2010
3rd Edition (As per CBSE syllabus) : July 2018
4th Edition : June 2019
5th Edition (Revised) : July 2019
6th Edition : Sept. 2020
7th Edition : Sept. 2021
8th Edition : Sept. 2022

ISBN 978 93 89255 41 6

Price ₹ 150/-

IMPORTANT NOTE

Due to huge demand of our different books, some duplicate copies of our books have been published by the duplicasters. To protect you against these duplicates/counterfeit/fake books, we have put a hologram sticker on the back cover of the original, genuine books. The hologram bears our logo in the front layer and our trade mark SDINESH in the second layer and when viewed at certain angles it gives multiple color effect. Readers are cautioned not to buy any such book which does not bear the said hologram. The book without the hologram may be a pirated one and anyone having the book can be sued under law. Readers are requested that they shall inform the publishers about the booksellers selling duplicate books which do not bear any hologram stickers on them. In the event of the information being correct, the informer shall be richly awarded and his/her name shall also be kept confidential.

OUR ADDRESSES IN INDIA :

Jalandhar City : Near Sita Mandir, Circular Road, Mai Hiran Gate, **Jalandhar**–144008
Ph : (0) 0181– 4606107, 08, 09, 7710711711 website : sdineshonline.in, e-mail : sdineshbooks@gmail.com

New Delhi : 4265, Gali No. 3, Mohalla Panjabian, Ansari Road, Darya Ganj, **Delhi**
Ph : 011–23250528, 23250058, e-mail : sdineshdelhi@gmail.com

Bengaluru : No. 60, 2nd Main, 11th Cross, Vittal Nagar, **Bengaluru**
Ph : 080-26755085 e-mail : sdineshbengaluru@rediffmail.com

Ranchi : South Samaj Street, Beside Srilok Complex, H. B. Road, Tharpakhana, **Ranchi–1**
Ph : 0651 2211334 e-mail : sdineshandcoranchi@gmail.com

Cochin : 41/161, Ammankovil Road, Near KSRTC, **Ernakulam**–682035
Ph : 0484-4851453 e-mail : sdineshcochin@gmail.com

DISCLAIMER

The contents in this book have been obtained from sources believed to be authentic. However, neither the Publishers nor its authors guarantee the accuracy or completeness of any information published herein. It is notified that the publishers and its authors shall not be responsible for any errors, omissions or damage arising out of the use of the information contained in the book. This book has been published with the understanding that the publisher and its authors are just supplying information and not rendering professional services. For binding mistakes, misprints or missing pages in the book, the publishers responsibility is limited to replace the book by similar edition within one month of its purchase.

Published by : S.P JAIN, B.L. & DINESH & Co., Near Sita Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph. & Fax 0181-4606107, 08, 09, 7710711711
Printed at : Maanglik Printers, Unit 6, Dinesh & Co., Ram Bagh, Tradesmen Nagar, Jalandhar. Ph. : 0181-5028820

CONTENTS

135

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester III & IV)

Chemistry

- Dinesh Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. III
- Dinesh [illegible] Group Organic Chemistry-IV, Solutions, Phase Equilibrium, Electrochemistry & [illegible] (Cluster University) — For Sem. III
- [illegible] Chemistry (J.U., C.L.U. & G.C.W. Parade) — For Sem. III
- [illegible] Perfumes and Medicinal Agents from Natural Sources (SEC) — For Sem. III
- [illegible] — For Sem. III
- [illegible] Chemistry, States of Matter & Chemical Kinetics (J.U. & G.C.W. Parade) — For Sem. IV
- [illegible] Matter-II, Chemical Kinetics & Coordination Chemistry (Cluster University) — For Sem. IV
- Vinesh [illegible] Chemistry (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV
- Dinesh Pesticide Chemistry (SEC) (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV

Physics

- Vinesh Electronics, Thermodynamics and Statistical Mechanics (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Thermal Physics And Statistical Mechanics (Cluster University) — For Sem. III
- Vinesh Practical Physics — For Sem. III
- Vinesh Physics Workshop Skill (SEC) — For Sem. III
- Vinesh Electrical Circuits and Network Skills (SEC) (Cluster University) — For Sem. III
- Vinesh Waves and Optics — For Sem. IV
- Vinesh Practical Physics — For Sem. IV
- Vinesh Renewable Energy and Energy Harvesting (SEC) — For Sem. IV
- Vinesh Radiation Safety (SEC) (Cluster University) — For Sem. IV

Botany

- Vinesh Plant Anatomy, Embryology and Ecology (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Plant Anatomy And Embryology (Cluster University) — For Sem. III
- Vinesh Plant Anatomy And Embryology (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Nursery, Gardening and Floriculture (SEC) (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Plant Physiology and Metabolism (J.U., C.L.U. & G.C.W. Parade) — For Sem. IV
- Dinesh Ethnobotany (SEC) (S-IV C.L.U., S-VI J.U.) — For Sem. IV
- Dinesh Biofertilizer (SEC) (S-IV J.U., S-VI C.L.U.) — For Sem. IV

Zoology

- Vinesh Physiology and Biochemistry — For Sem. III
- Vinesh Apiculture (SEC) (J.U. & G.C.W. Parade) — For Sem. III
- Vinesh Aquarium Fish Keeping (SEC) (Cluster University) — For Sem. III
- Vinesh Sericulture (SEC) (Cluster University) — For Sem. III
- Vinesh Principles of Genetics and Evolutionary Biology — For Sem. IV
- Vinesh Physical Anthropology (SEC) (Cluster University) — For Sem. IV
- Vinesh Aquarium Fish Keeping (SEC) (J.U. & G.C.W. Parade) — For Sem. IV
- Vinesh Computer Applications in Biology (SEC) (Cluster University) — For Sem. IV

since 1982

S. DINESH & Co.

Sister Concern : **S. VINESH & Co.**

JALANDHAR · DELHI · BANGALORE · COCHIN · RANCHI

An ISO 9001 : 2015 Certified Company

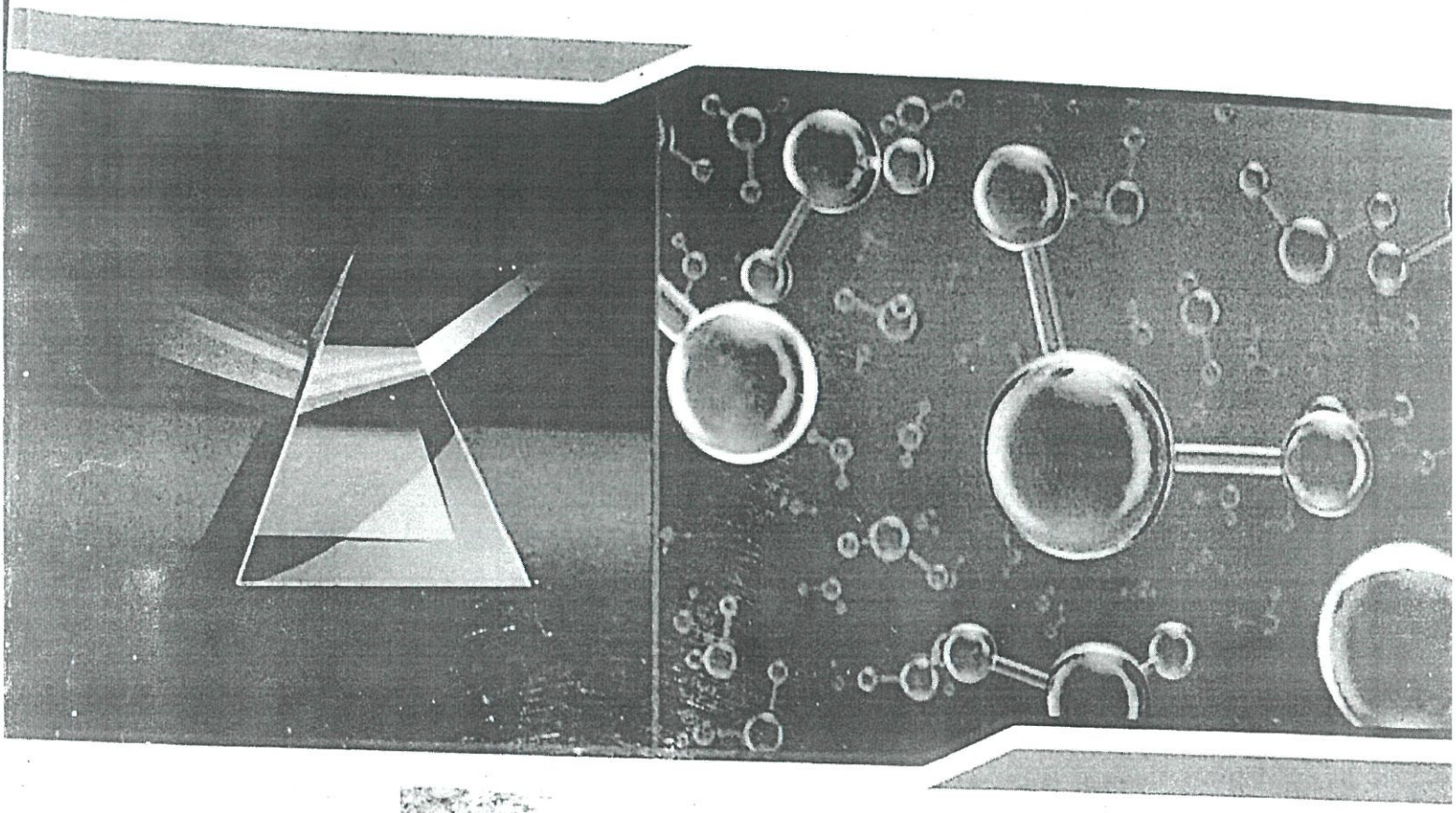
I.S.B.N. No. 978-93-89255-41-6

9 789389 255416

132

AQMCS
JAS-ANZ
ISO 9001 Registered

As per new Syllabus of
Jammu University & GCW, Parade
Course No : UCHTE501



JMD
DINESH

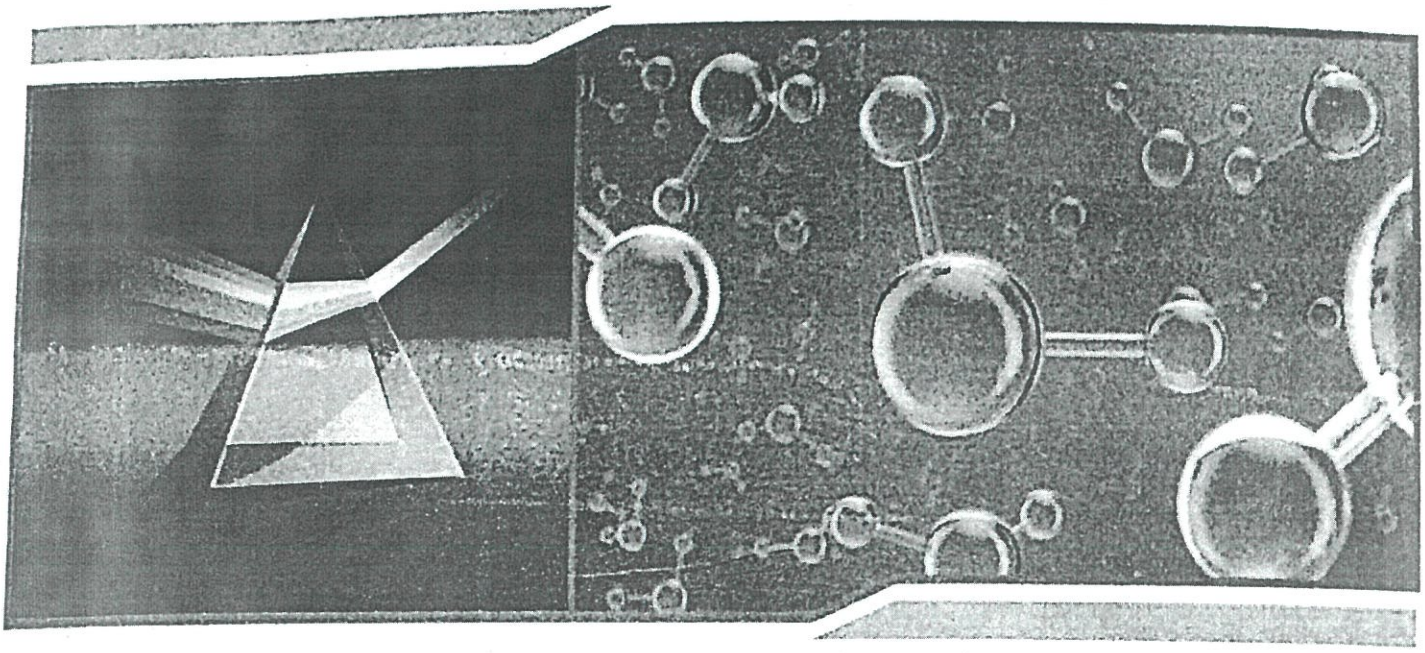
Spectroscopy, Photochemistry & Organo Metallics & Bioinorganic Chemistry

B.Sc. (Semester V)

Dr. Satinder K. Juneja Dr. Aran Kumar Dr. Puja Nanda

AQMCS JAS-ANZ
ISO 9001 Registered

As per new CBCS syllabus of
Jammu University & GCW, Parade
Course No : UCHTE501



DINESH

Spectroscopy, Photochemistry & Organo Metallics & Bioinorganic Chemistry

For the students of Class B.Sc. Sem. V of Jammu University, GCW, Parade and various other Indian Universities as per new CBCS syllabus.

Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Deptt. of Chemistry
GCW, Parade, Jammu.

Dr. Arun Kumar
M.Sc., Ph.D., NET
Deptt. of Chemistry
G.G.M. Science College, Jammu.

Dr. Puja Nanda
M.Sc., Ph.D., NET, GATE
Dept. of Chemistry
GCW, Parade, Jammu.

2018

S. DINESH & Co.

Sister Concern : S. VINESH & Co.

•JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

139

PRINTING HISTORY

1st Edition : July, 2018

I.S.B.N. 978-93-88085-65-6

Price { ₹ 150/-

IMPORTANT NOTE

Due to huge demand of our different books, some duplicate copies of our books have been published by the duplicators. To protect you against these duplicate/counterfeit/fake books, we have put a hologram sticker on the title cover of the original/genuine books. This hologram bears our logo in the front layer and our trade mark DINESH in the second layer and when viewed at certain angles it gives multiple color effect. Readers are cautioned not to buy any such book which does not bear the said hologram. The book without this hologram may be spurious one and anyone having this book can be sued under law. Readers are requested that they shall inform the publishers about the booksellers selling duplicate books which do not bear any hologram stickers on them. In the event of this information being correct, the informer shall be richly awarded and his/her name shall also be kept confidential.

OUR ADDRESSES IN INDIA :

Jalandhar City : Near Sitla Mandir, Circular Road, Mai Hiran Gate, **Jalandhar**–144008
Ph.: (0) 0181– 4606108, 09, 11, 7710711711 website : sdineshonline.in, e-mail : sdineshandco@gmail.com

New Delhi : 4265, Gali No. 3, Mohalla Panjabian, Ansari Road, Darya Ganj, **Delhi**
Ph.: 011–23250020, 23250050, e-mail : sdineshdelhi@gmail.com

Bengaluru : No. 60, 2nd Main, 11th Cross, Vittal Nagar, **Bengaluru**
Ph.: 080–26755085 e-mail : sdineshbengaluru@rediffmail.com

Ranchi : South Samaj Street, Beside Srilok Complex, H. B. Road, Tharpakhana, **Ranchi–1**
Ph.: 0651-2211334 e-mail : sdineshandcoranchi@gmail.com

Cochin : 41/161, Ammankovil Road, Near KSRTC, **Ernakulam**–682035
Ph.: 0484-4851453 e-mail : sdineshcochin@gmail.com

DISCLAIMER

Published by : S.P. JAIN, B.E., S.DINESH & Co., Near Sitla Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph. & Fax :0181–4606108, 09, 11, 7710711711

Printed at ...

140

Contents

141

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester I to VI)

Chemistry

* Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (J.U. & G.C.W. Parade)	For Sem. I
* Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Cluster University)	For Sem. I
* Chemical Energetics, Equilibria & Functional Organic Chemistry (J.U. & G.C.W. Parade)	For Sem. II
* Chemical Energetics, Equilibria & Functional Organic Chemistry (Cluster University)	For Sem. II
* Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry (J.U.)	For Sem. III
* Cosmetics, Perfumes and Medicinal Agents from Natural Sources (Skill Enhancement Course)	For Sem. III
* Coordination Chemistry, States of Matter & Chemical Kinetics (J.U.)	For Sem. IV
* Pesticide Chemistry (Skill Enhancement Course)	For Sem. IV
* Spectroscopy, Photochemistry and Organo Metallics and Bioinorganic Chemistry	For Sem. V
* Fuel Chemistry (Skill Enhancement Course)	For Sem. V
* Organic Chemistry-II	For Sem. VI

Endeavour for Excellence... Driven by Values

S. DINESH & Co.

Sister Concern : S. VINESH & Co.

•JALANDHAR•DELHI•BANGALORE•COCHIN•RANCHI

An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-88085-65-6

978-93-87659-65-6

143

Based on Four Year Undergraduate Program (FYUGP)
as per New Education Policy (NEP)

JMD
VINESH

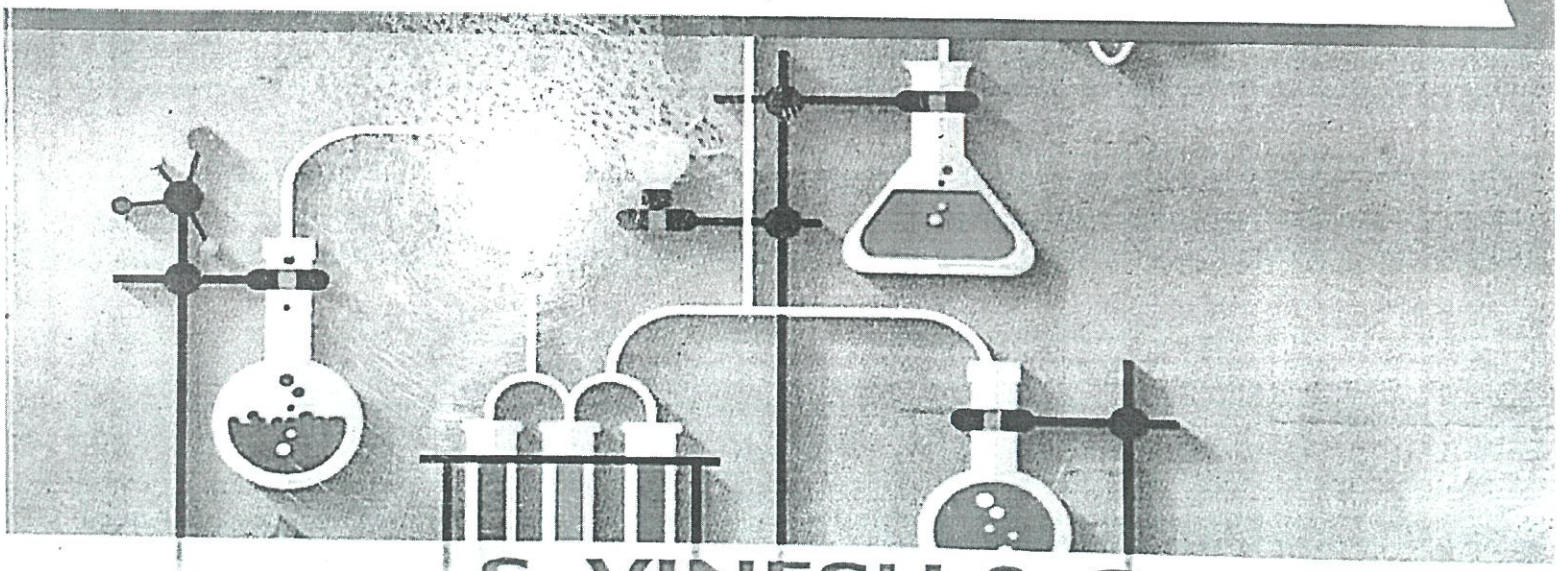
Practical Manual in

CHEMISTRY

(Major / Minor)

B.Sc. Semester I (Kashmir University)

Dr. Satinder K. Juneja Dr. Aran Kumar Dr. Syed Muzaffar Ahmed



S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982

Based on Four Year Undergraduate Program (FYUGP) as per New Education Policy (NEP)

VINESH JMD

Practical Manual in CHEMISTRY

(Major / Minor)

B.Sc. Semester I (Kashmir University)

Personal Memoranda

Name : _____

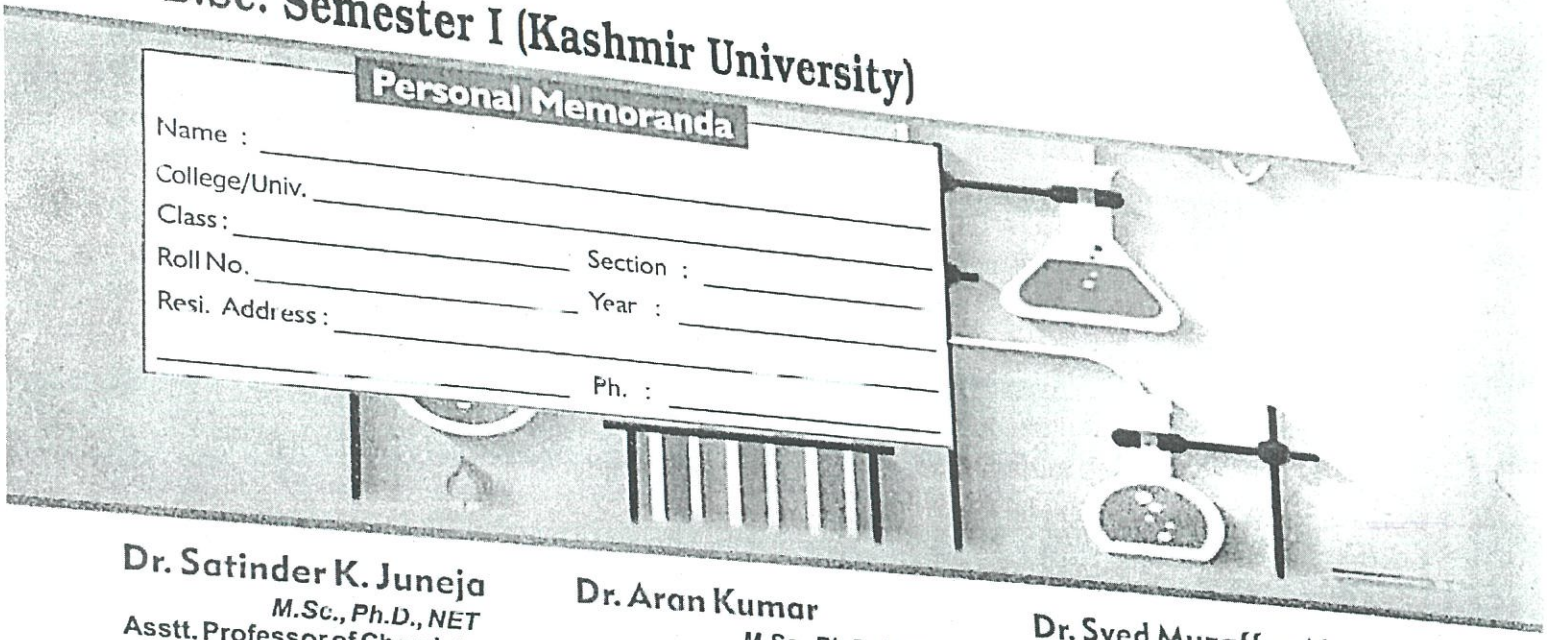
College/Univ. _____

Class : _____

Roll No. _____ Section : _____

Resi. Address : _____ Year : _____

_____ Ph. : _____



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Asstt. Professor of Chemistry
Govt. M.A.M. College, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

Dr. Syed Muzaffar Ahmed
Associate Professor of Chemistry
A.A.A. Memorial Degree College,
Bemina, Srinagar

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

• JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

Price ₹ 150/-

145

Contents

Our Distinguished books as per NEP for Kashmir University and Cluster University, Srinagar

For B.A./B.Sc./B.Com. (Sem. I) Classes

CHEMISTRY

- Vinesh College Chemistry–I (Major / Minor) (CUS) — For B.Sc. Sem. I
- Vinesh Practical Chemistry (Major / Minor) (CUS) — For B.Sc. Sem. I
- Vinesh Applied Chemistry (Multidisciplinary) (CUS) — For B.Sc. Sem. I
- Vinesh Food Adulteration (Skill Course) (CUS) — For B.Sc. Sem. I
- Vinesh College Chemistry–I (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Practical Chemistry (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Food Adulteration (Multidisciplinary) (K.U.) — For B.Sc. Sem. I to III

PHYSICS

- Vinesh A Text Book of Mechanics (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Renewable Energy & Energy Harvesting (Skill Course) (K.U.) — For B.Sc. Sem. I

BOTANY

- Vinesh Biodiversity (Microbes, Algae, Fungi and Archegoniates) (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Introduction to Mushroom Science (Skill Course) (K.U.) — For B.Sc. Sem. I

ZOOLOGY

- Vinesh Introduction [illegible]ematics & Non-Chordates (Major / Minor) [illegible] — For B.Sc. Sem. I

MATHEMATICS

- Vinesh A Text Book of Calculus – I (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Excellent Calculus – I (Major / Minor) (K.U.) — For B.Sc. Sem. I

Endeavour for Excellence, Achieve by Vision

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

-JALANDHAR - DELHI - BANGALORE - COCHIN - RANCHI

I.S.B.N. No. 978-93-90638-24-6

9 789390 638246

Buy Our Books at www.sdineshonline.in | amazon | All Leading Bookstores

Follow us on SVinesh Co & SDinesh Co | svinesh_sdinesh.books | S.Vinesh & Co. (S.Dinesh & Co.)

Based on Four Year Undergraduate Program (FYUGP)
as per New Education Policy (NEP)

JMD
VINESH

Practical Manual in Foundation Course Chemistry - I

(Major / Minor)

B.Sc. Semester I (Jammu University)

Dr. Satinder K. Juneja
Dr. Aran Kumar
Dr. Ashiq Hussain

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982

148

Based on Four Year Undergraduate Program (FYUGP)
as per New Education Policy (NEP)

JMD
VINESH

Practical Manual in Foundation Course Chemistry - I

(Major / Minor)

B.Sc. Semester I (Jammu University)

Personal Memoranda

Name : _____

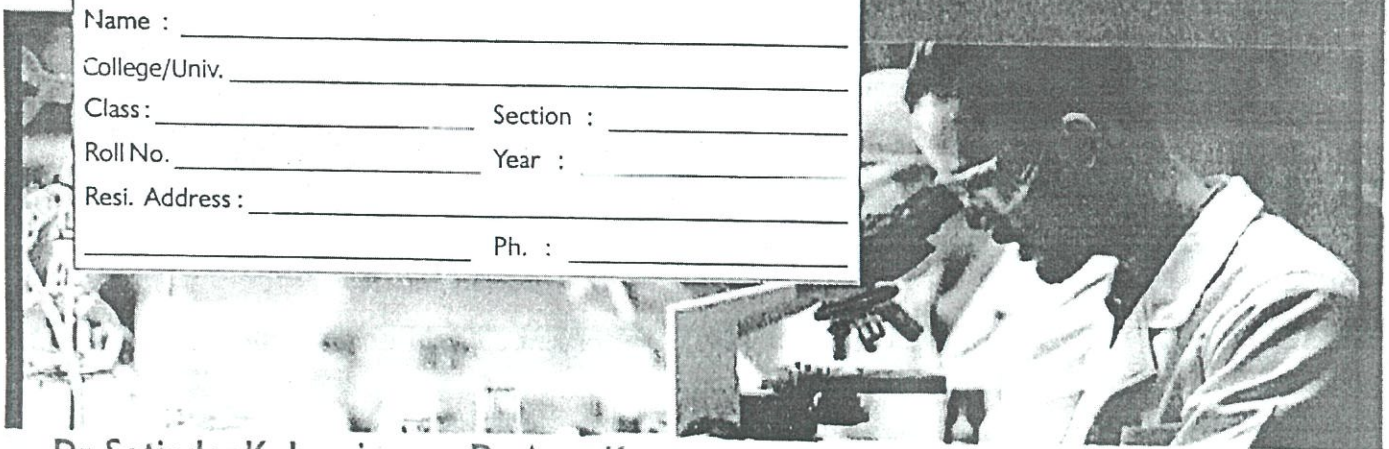
College/Univ. _____

Class : _____ Section : _____

Roll No. _____ Year : _____

Resi. Address : _____

_____ Ph. : _____



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Asstt. Professor of Chemistry
Govt. M.A.M. College, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

Dr. Ashiq Hussain
M.Sc., Ph.D.
Associate Professor of Chemistry,
GDC, Kishtwar.

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
•JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

Price ₹ 185/-

Contents

Our Distinguished Books as per NEP for Jammu University, GCW Parade and Cluster University of Jammu
For Semester I

Chemistry

- Vinesh Foundation Course in Chemistry – I (Major / Minor) (J.U.) — For Sem. I
- Vinesh Practical Manual in Foundation Course Chemistry – I (Major / Minor) (J.U.) — For Sem. I
- Vinesh Basic Analytical Techniques in Chemistry (Skill Course) (J.U.) — For Sem. I
- Vinesh Fundamentals of Chemistry – I (Major / Minor) (C.L.U.) — For Sem. I
- Vinesh Pharmaceutical Chemistry – I (Skill Course) (C.L.U.) — For Sem. I

Physics

- Vinesh A Text Book of Mechanics (Major) (J.U.) — For Sem. I
- Vinesh A Text Book of Kinematics (Minor) (J.U.) — For Sem. I
- Vinesh Practical Manual in Mechanics (Major / Minor) (J.U.) — For Sem. I
- Vinesh A Text Book of Physics Lab Skills (Skill Course) (J.U.) — For Sem. I
- Vinesh A Text Book of Mechanics, Oscillations & Theory of Relativity (Major / Minor) (G.C.W.) — For Sem. I
- Vinesh A Text Book of Electricity & Magnetism (Major / Minor) (C.L.U.) — For Sem. I

Botany

- Vinesh Introduction to Microbes & Plant Kingdom (Major / Minor) (J.U.) — For Sem. I
- Vinesh Nursery & Gardening (Skill Course) (J.U.) — For Sem. I
- Vinesh Practical Botany – I (Microbes, Cryptogams & Seed Plants) (Major / Minor) (J.U., K.U.) — For Sem. I

Zoology

- Vinesh A Text Book of A Text Book of Animal Diversity — For Sem. I

Mathematics

- Vinesh A Text Book of Differential Calculus (Major / Minor) (J.U.) — For Sem. I
- Vinesh Excellent Differential Calculus (Fully Solved) (Major / Minor) (J.U.) — For Sem. I

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982
-JALANDHAR -DELHI -BANGALORE -COCHIN -RANCHI

I.S.B.N. No. 978-93-90638-17-8
9 789390 638178

Buy Our Books at www.sdineshonline.in | amazon | All Leading Bookstores
Follow us on SVinesh Co & SDinesh Co | svinesh_sdinesh.books | S.Vinesh & Co. (S.Dinesh & Co.)

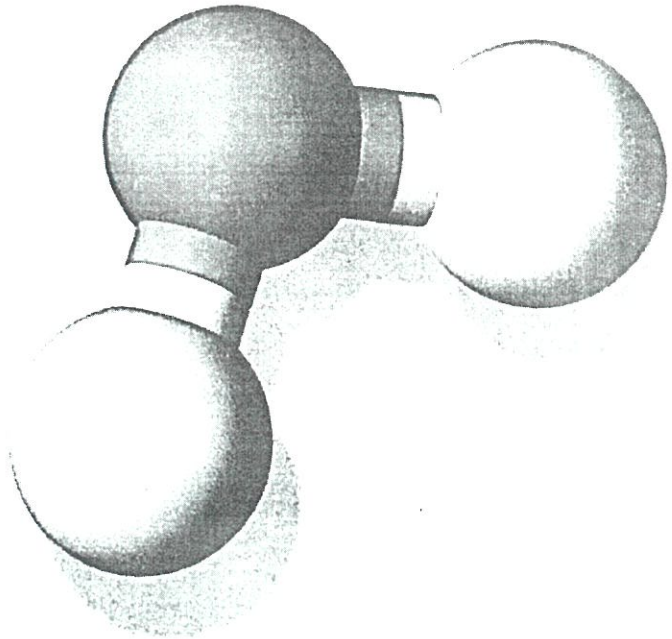
JAS-ANZ
AQMCS
ISO 9001 Registered

As per new CBCS Syllabus of
Cluster University of Jammu

JND
DINESH

Quantum Chemistry, Spectroscopy & Photochemistry

B.Sc. (Semester V)



Dr. Satinder K. Juneja Dr. Aran Kumar Dr. Puja Na

PRINTING HISTORY

1st Edition : July, 2017

3rd Edition (As per new syllabus) : July, 2019

I.S.B.N. No. 978-93-89255-42-3

Price ₹ 170/-

IMPORTANT NOTE

Due to huge demand of our different books, some duplicate copies of our books have been published by the duplicators. To protect you against these duplicate/counterfeit/fake books, we have put a hologram sticker on the title cover of the original/genuine books. This hologram bears our logo in the front layer and our trade mark DINESH in the second layer and when viewed at certain angles it gives multiple color effect. Readers are cautioned not to buy any such book which does not bear the said hologram. The book without this hologram may be spurious one and anyone having this book can be sued under law. Readers are requested that they shall inform the publishers about the booksellers selling duplicate books which do not bear any hologram stickers on them. In the event of this information being correct, the informer shall be richly awarded and his/her name shall also be kept confidential.

OUR ADDRESSES IN INDIA :

Jalandhar City : Near Sitla Mandir, Circular Road, Mai Hiran Gate, **Jalandhar**–144008
Ph.: (0) 0181– 4606108, 09, 11, 7710711711 e-mail : sdineshandco@gmail.com

New Delhi : 4265, Gali No. 3, Mohalla Panjabian, Ansari Road, Darya Ganj, **Delhi**
Ph.: 011–23250628, 23250058, e-mail : sdineshdelhi@gmail.com

Bengaluru : No. 60, 2nd Main, 11th Cross, Vittal Nagar, **Bengaluru**
Ph.: 080–26755085 e-mail : sdineshbengaluru@rediffmail.com

Ranchi : South Samaj Street, Beside Srilok Complex, H. B. Road, Tharpakhana, **Ranchi–1**
e-mail : sdineshandcoranchi@gmail.com

Cochin : 41/161, Ammankovil Road, Near KSRTC, **Ernakulam**–682035
Ph.: 0484-4851453 e-mail : sdineshcochin@gmail.com

DISCLAIMER

The contents in this book have been obtained from sources believed to be authentic. However, neither the Publishers nor its authors guarantee the accuracy or completeness of any information published herein. It is notified that the publishers and its authors shall not be responsible for any errors, omissions or damage arising out of the use of the information contained in the book. This book has been published with the understanding that the publisher and its authors are just supplying information and not rendering professional services. For binding mistakes, misprints or missing pages in the book, the publishers responsibility is limited to replace the book by similar edition within one month of its purchase.

Published by : S.P. JAIN, B.E., S.DINESH & Co., Near Sitla Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph.: 0181–4606108, 09, 11, 7710711711

Printed at : Maanglik Printers, Unit- S. Dinesh & Co., Ram Bagh, Transport Nagar, Jalandhar Ph. : 0181–5028620.

Our Distinguished Books as per new CBCS syllabus of Jammu University, GCW Parade and Cluster University of Jammu

For B.Sc. Classes (Semester I to VI)

Chemistry

- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (J.U. & G.C.W. Parade) — For Sem. I
- Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons (Cluster University) — For Sem. I
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (J.U. & G.C.W. Parade) — For Sem. II
- Dinesh Chemical Energetics, Equilibria & Functional Organic Chemistry (Cluster University) — For Sem. II
- Dinesh Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry (J.U.) — For Sem. III
- Dinesh Functional Group Organic Chemistry-IV, Solutions, Phase Equilibrium, Electrochemistry & States of Matter-I (Cluster University) — For Sem. III
- Dinesh Cosmetics, Perfumes and Medicinal Agents from Natural Sources (Skill Enhancement Course) — For Sem. III
- Dinesh Coordination C[illegible] States of Matter & Chemical Kinetics (J.U.) — For Sem. IV
- Dinesh States of Mat[illegible]ical Kinetics & Coordination Chemistry (Cluster University) — For Sem. IV
- Dinesh Pesticide Chemistry (Skill Enhancement Course) — For Sem. IV
- Dinesh Spectroscopy, Photochemistry and Organo Metallics and Bioinorganic Chemistry (J.U. & G.C.W. Parade) — For Sem. V
- Dinesh Quantum Chemistry, Spectroscopy & Photochemistry (Cluster University) — For Sem. V
- Dinesh Fuel Chemistry (Skill Enhancement Course) — For Sem. V
- Dinesh Organic Chemistry-II — For Sem. VI

since 1982

S. DINESH & Co.

Sister Concern : S. VINESH & Co.

•JALANDHAR • DELHI • BANGALORE • COCHIN • RANCHI

An ISO 9001 : 2015 Certified Company

I.S.B.N. No. 978-93-89255-42-3

9 789389 255542

Based on Four Year Undergraduate Program (FYUGP)
as per New Education Policy (NEP)

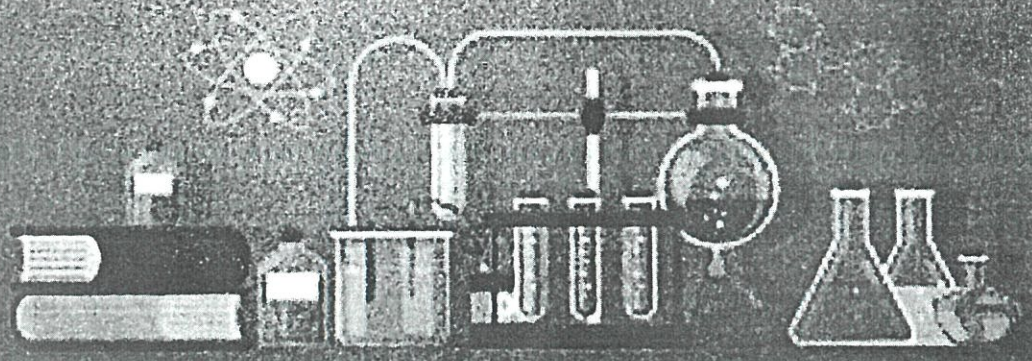
JMD
VINESH

Foundation Course in Chemistry-I

(Major / Minor)

B.Sc. SEMESTER - I (Jammu University)

For the students of Class B.Sc. (Sem. I) of Jammu University and various other Indian Universities as per new syllabus.



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Asstt. Professor of Chemistry
Govt. M.A.M. College, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

Dr. Yash Paul
M.Sc., Ph.D.
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

2023

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

•JALANDHAR • DELHI • BENGALURU • COCHIN • RANCHI

PRINTING HISTORY

1st Edition : Sep., 2022

I.S.B.N. 978-93-90638-18-5

Price { ₹ 185/-

IMPORTANT NOTE

Due to huge demand of our different books, some duplicate copies of our books have been published by the duplicators. To protect you against these duplicate/counterfeit/fake books, we have put a hologram sticker on the title cover of the original/genuine books. This hologram bears our logo in the front layer and our trade mark VINESH in the second layer and when viewed at certain angles it gives multiple color effect. Readers are cautioned not to buy any such book which does not bear the said hologram. The book without this hologram may be spurious one and anyone having this book can be sued under law. Readers are requested that they shall inform the publishers about the booksellers selling duplicate books which do not bear any hologram stickers on them. In the event of this information being correct, the informer shall be richly awarded and his/her name shall also be kept confidential.

OUR ADDRESSES IN INDIA :

Jalandhar City : Near Sitla Mandir, Circular Road, Mai Hiran Gate, **Jalandhar**–144008
Ph.: (0) 0181– 4606107, 08, 09, 7710711711 website : sdineshonline.in, e-mail : sdineshandco@gmail.com

New Delhi : 4265, Gali No. 3, Mohalla Panjabian, Ansari Road, Darya Ganj, **Delhi**
Ph.: 011–23250628, 23250058, e-mail : sdineshdelhi@gmail.com

Bengaluru : No. 60, 2nd Main, 11th Cross, Vittal Nagar, **Bengaluru**
Ph.: 080–26755085 e-mail : sdineshbengaluru@rediffmail.com

Ranchi : South Samaj Street, Beside Srilok Complex, H. B. Road, Tharpakhana, **Ranchi–1**
Ph.: 0651-2211334 e-mail : sdineshandcoranchi@gmail.com

Cochin : 41/101, Ammankovil Road, Near KSRTC, **Ernakulam**–682035
Ph.: 0484-4851453 e-mail : sdineshcochin@gmail.com

DISCLAIMER

The contents in this book have been obtained from sources believed to be authentic. However, neither the Publishers nor its authors guarantee the accuracy or completeness of any information published herein. It is notified that the publishers and its authors shall not be responsible for any errors, omissions or damage arising out of the use of the information contained in the book. This book has been published with the understanding that the publisher and its authors are just supplying information and not rendering professional services. For binding mistakes, misprints or missing pages in the book, the publishers responsibility is limited to replace the book by similar edition within one month of its purchase.

Published by : Vinesh Jain, S. Vinesh & Co., Near Sitla Mandir, Circular Road, Mai Hiran Gate, Jalandhar-144008
Ph.: 0181–4606107, 08, 09, 7710711711

Printed at : Convenient Printers, Mubarkpur Sheikh, Jalandhar

Contents

Our Distinguished Books as per NEP for Jammu University, GCW Parade and Cluster University of Jammu

For Semester I

Chemistry

- Vinesh Foundation Course in Chemistry – I (Major / Minor) (J.U.) — For Sem. I
- Vinesh Practical Manual in Foundation Course Chemistry – I (Major / Minor) (J.U.) — For Sem. I
- Vinesh Basic Analytical Techniques in Chemistry (Skill Course) (J.U.) — For Sem. I
- Vinesh Fundamentals of Chemistry – I (Major / Minor) (C.L.U.) — For Sem. I
- Vinesh Pharmaceutical Chemistry – I (Skill Course) (C.L.U.) — For Sem. I

Physics

- Vinesh A Text Book of Mechanics (Major) (J.U.) — For Sem. I
- Vinesh A Text Book of Kinematics (Minor) (J.U.) — For Sem. I
- Vinesh Practical Manual in Mechanics (Major / Minor) (J.U.) — For Sem. I
- Vinesh A Text Book of Physics Lab Skills (Skill Course) (J.U.) — For Sem. I
- Vinesh A Text Book of Mechanics, Oscillations & Theory of Relativity (Major / Minor) (G.C.W.) — For Sem. I
- Vinesh A Text Book of Electricity & Magnetism (Major / Minor) (C.L.U.) — For Sem. I

Botany

- Vinesh Introduction to Mic[illegible] Kingdom (Major / Minor) (J.U.) — For Sem. I
- Vinesh Nursery & Garden[illegible]urse) (J.U.) — For Sem. I
- Vinesh Practical Botany – I (Micr[illegible]s, Cryptogams & Seed Plants) (Major / Minor) (J.U., K.U.) — For Sem. I

Zoology

- Vinesh A Text Book of Animal Diversity — For Sem. I

Mathematics

- Vinesh A Text Book of Differential Calculus (Major / Minor) (J.U.) — For Sem. I
- Vinesh Excellent Differential Calculus (Fully Solved) (Major / Minor) (J.U.) — For Sem. I

I.S.B.N. No. 978-93-90638-18-5

9 789390 638185

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

JALANDHAR · DELHI · BANGALORE · COCHIN · RANCHI

An ISO 9001 : 2015 Certified Company

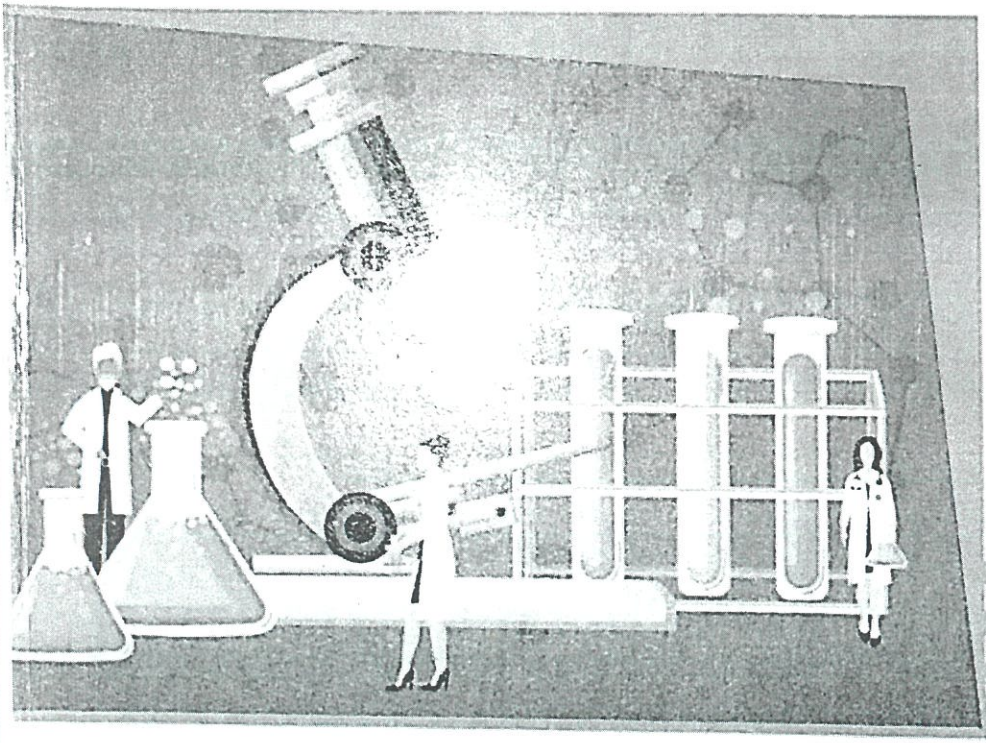
JMD
VINESH

As per NEP - 2020

Practical Manual in

CHEMISTRY

B.Sc. Semester I (Cluster Univ. Srinagar)
(Major / Minor)



Dr. Satinder K. Juneja

Dr. Aran Kumar

Dr. Syed Muzaffar Ahmed

S. VINESH & Co.
Sister Concern :
S. DINESH & Co.
since 1982

160

JMD
VINESH

As per NEP - 2020

Practical Manual in

CHEMISTRY

(Major / Minor)

For the students of Class B.Sc. (Semester I) of Cluster University, Srinagar and various other Indian Universities as per NEP - 2020

Personal Memoranda

Name : _____

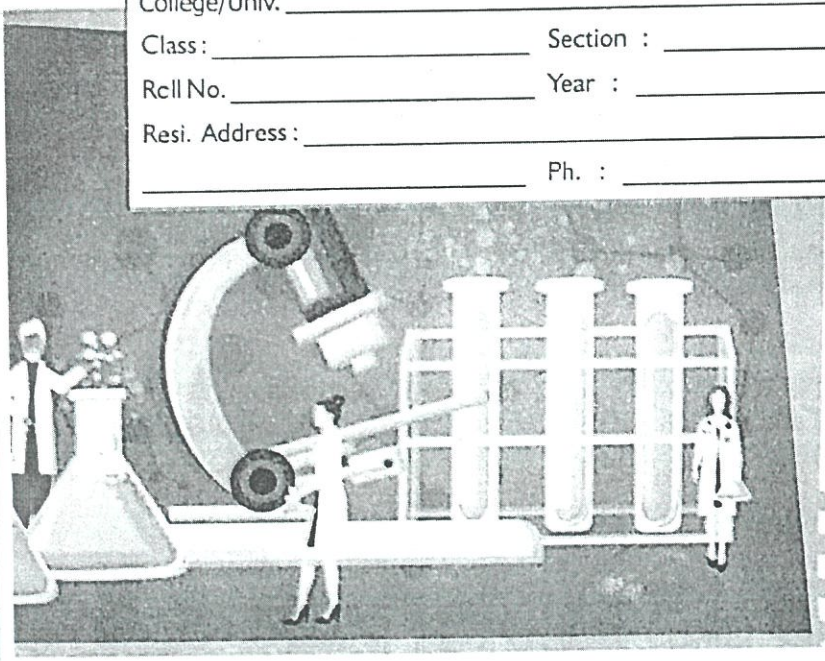
College/Univ. _____

Class : _____ Section : _____

Roll No. _____ Year : _____

Resi. Address : _____

_____ Ph. : _____



Dr. Satinder K. Juneja
M.Sc., Ph.D., NET
Asstt. Professor of Chemistry
Govt. M.A.M. College, Jammu.

Dr. Aran Kumar
M.Sc., Ph.D., NET
Associate Professor of Chemistry
PSPS, G.C.W. Gandhi Nagar, Jammu.

Dr. Syed Muzaffar Ahmed
Associate Professor of Chemistry
A.A.A. Memorial Degree College,
Bomina, Srinagar

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

• JALANDHAR• DELHI• BENGALURU• COCHIN• RANCHI

Price { ₹ 150/-

Contents

Our Distinguished books as per NEP 2020 for Kashmir University and Cluster University, Srinagar

For B.A./B.Sc./B.Com. (Sem. I) Classes

CHEMISTRY

- Vinesh College Chemistry–I (Major / Minor) (CUS) — For B.Sc. Sem. I
- Vinesh Practical Chemistry (Major / Minor) (CUS) — For B.Sc. Sem. I
- Vinesh Applied Chemistry (Multidisciplinary) (CUS) — For B.Sc. Sem. I
- Vinesh Food Adulteration (Skill Course) (CUS) — For B.Sc. Sem. I
- Vinesh College Chemistry–I (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Practical Chemistry (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Food Adulteration (Multidisciplinary) (K.U.) — For B.Sc. Sem. I to III

PHYSICS

- Vinesh A Text Book of Mechanics (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Renewable Energy & Energy Harvesting (Skill Course) (K.U.) — For B.Sc. Sem. I

BOTANY

- Vinesh Biodiversity (Microbes, Algae, Fungi and Archegoniates) (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vinesh Introduction to Mushroom Science (Skill Course) (K.U.) — For B.Sc. Sem. I

ZOOLOGY

- Vinesh Introduction to Systematics & Non Chordates (Major / Minor) (K.U.) — For B.Sc. Sem. I

MATHEMATICS

- Vi[illegible] of Calculus I (Major / Minor) (K.U.) — For B.Sc. Sem. I
- Vi[illegible] Calculus – I (Major / Minor) (K.U.) — For B.Sc. Sem. I

Endeavour for Excellence... Strive to Serve

S. VINESH & Co.

Sister Concern :

S. DINESH & Co.

since 1982

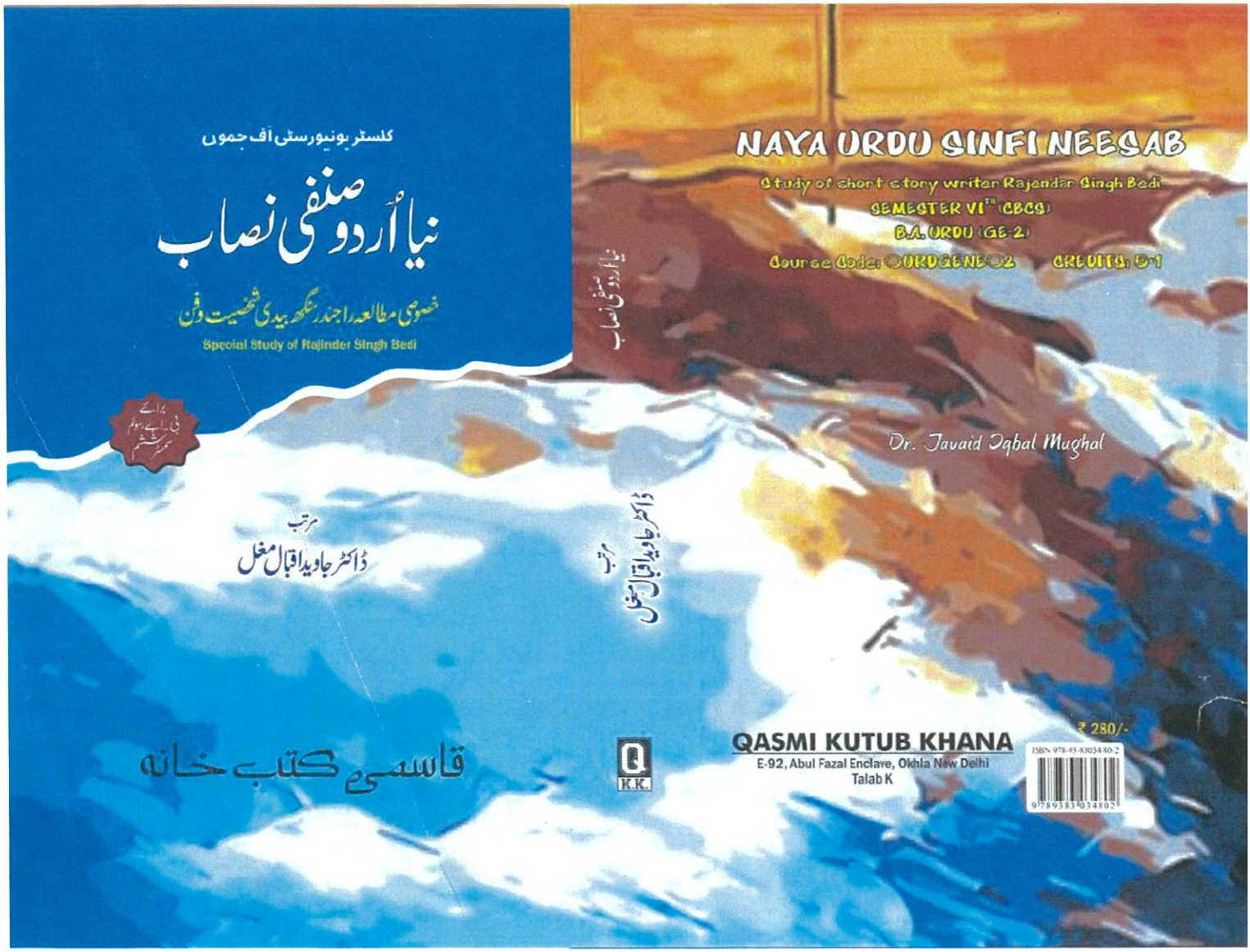
-JALANDHAR- DELHI- BANGALORE- COCHIN- RANCHI

I.S.B.N. No. 978-93-90638-09-3

9 789390 638093

Buy Our Books at www.sdineshonline.in | amazon | All Leading Bookstores

Follow us on SVinesh Co & SDinesh Co | svinesh_sdinesh.books | S.Vinesh & Co. (S.Dinesh & Co.)


کلسٹر یونیورسٹی آف جموں
نیا اُردو صنفی نصاب
خصوصی مطالعہ راجندر سنگھ بیدی شخصیت وفن
Special Study of Rajinder Singh Bedi
برائے بی اے سمسٹر ششم
مرتب
ڈاکٹر جاوید اقبال مغل
قاسمی کتب خانہ
نیا اردو صنفی نصاب
مرتب
ڈاکٹر جاوید اقبال مغل
K.K.
NAYA URDU SINFI NEESAB
Study of short story writer Rajendar Singh Bedi
SEMESTER VI TH (CBCS)
B.A. URDU (GE-2)
Course Code: URDGENE02 CREDITS: 04
Dr. Javaid Iqbal Mughal
QASMI KUTUB KHANA
E-92, Abul Fazal Enclave, Okhla New Delhi
Talab K
₹ 280/-
ISBN 978-93-83034-80-2
9 789383 034802