

Department of Chemistry

Report on skill-based Course:- Computational Chemistry in Separation Science

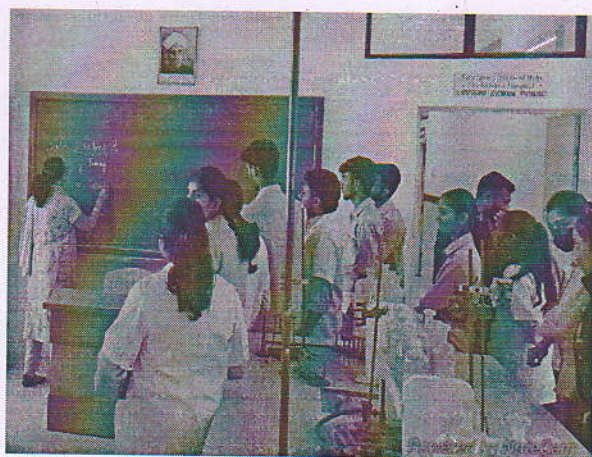
Date:-27/02/2024

Computational Chemistry in Separation Science, Add-on course run by the Department of Chemistry Shri Shivaji Science College Nagpur, the motto behind this course is to enrich students with knowledge of Computer in the field of Chemistry, especially in the separation of metal ions, organic pigmentations, etc. Students from B.Sc I, II, and III were admitted for this course. It's a 10-week duration course in which theory and practicals are taken. For practical demo was given on Software like Gaussian, AMBER, etc. and an assessment was done with the help of viva voce, the report writing, and case study preparation were very helpful for students. Theory Paper was MCQ-based, 82 students were enrolled but only 79 students appeared for theory as well as for practicals.

Course Name:- Computational Chemistry in Separation Science

Number of Students Appeared:- 82

Number of Passed Students:- 79.



Theory and Practical Class:- Add-on Course- Computational Chemistry in Separation Science

Dr. P.N. Deshmukh
Assistant Professor
Department of Chemistry
S.S.E.S.A.'s Science College
Nagpur

To,
The Principal
SSES Aml's Science College,
Congress Nagar, Nagpur-12

Subject: For permission to conduct the add on courses in the department during the session 2023-2024

Respected Sir,

This is to request you that, the teachers of our Chemistry department have prepared the syllabus and modules of the 30 hours certificate courses for the session 2023-2024.

The details of the course module, syllabus and time table is submitted here with.

Hence please permit to run the add on courses and oblige me.

Thanking you

Dr
24/6/23

Yours sincerely



(Prof. R. U. Khope)

Professor & Head
Department of Chemistry,
Shri Shivaji Science College
Congress Nagar, Nagpur.

Permitted
R. U. Khope

S.S.E.S. Amt's Science College, Congress Nagar, Nagpur.

Department of Chemistry

Add-on (2023-2024)

Certificate Course:- Computational Chemistry in Separation Science.

Notice

Date: 1/12/2023

The Department of Chemistry is conducting an Add-on **Certificate Course on Computational Chemistry in Separation Science** for the session 2023-24. Interesting students of B.Sc. Part I, Part II & Part III should register early and contact the Course Coordinator Dr.P.N.Deshmukh immediately.

Starting date of Course:- 15/12/2023.

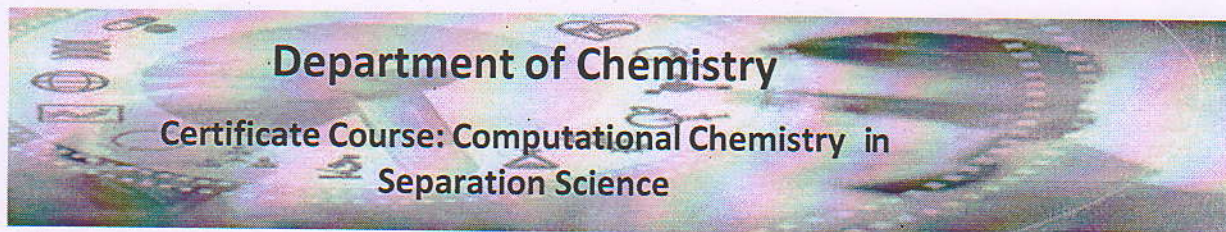
Dr.P.N.Deshmukh

Course Coordinator
Assistant Professor
Department of Chemistry
S.S.E.S.A.'s Science College
Nagpur

H.O.D

Department of Chemistry

Professor & Head
Department of Chemistry,
Shri Shivaji Science Collage
Congress Nagar, Nagpur.



Department of Chemistry

Certificate Course: Computational Chemistry in
Separation Science

Free Certificate course for college students

Registration Started

Duration – 30 hrs. (10 weeks).

Reserve Your Seat Today.

**Start Your Course with
Promising Future**

Course Objectives

- To introduce the fundamental concepts of computational chemistry and its relevance to separation science.
- To provide practical skills in using computational tools and software for chemical analysis and separation processes.
- To enhance problem-solving abilities by applying computational methods to real-world separation science challenges.
- To foster a deeper understanding of the molecular interactions and mechanisms underlying separation techniques

Course Outcomes

Upon completion of this course, students will be able to:

- Understand and explain the basic principles of computational chemistry and how they apply to separation science.
- Utilize computational chemistry software to model, simulate, and analyze chemical separations.
- Interpret computational results to make informed decisions in the design and optimization of separation processes.
- Apply computational methods to solve complex problems in separation science, including the identification and quantification of compounds

Contact- Course Convener

Dr. Priyadarshani. N. Deshmukh
Assistant Professor,
Department of Chemistry,
9881332586.

Certificate Course: Computational Chemistry in Separation Science

Introduction

Computational Chemistry in Separation Science is an interdisciplinary certificate course designed to bridge the gap between theoretical chemistry and practical applications in separation science. This course will introduce students to the principles and techniques of computational chemistry and how they can be applied to solve problems in separation science. Through a combination of lectures, hands-on practical sessions, and case studies, students will gain a comprehensive understanding of computational methods and their application in the separation and analysis of chemical compounds.

Course Objectives

1. To introduce the fundamental concepts of computational chemistry and its relevance to separation science.
2. To provide practical skills in using computational tools and software for chemical analysis and separation processes.
3. To enhance problem-solving abilities by applying computational methods to real-world separation science challenges.
4. To foster a deeper understanding of the molecular interactions and mechanisms underlying separation techniques.

Course Outcomes

Upon completion of this course, students will be able to:

1. Understand and explain the basic principles of computational chemistry and how they apply to separation science.
2. Utilize computational chemistry software to model, simulate, and analyze chemical separations.
3. Interpret computational results to make informed decisions in the design and optimization of separation processes.
4. Apply computational methods to solve complex problems in separation science, including the identification and quantification of compounds

Course Structure

Unit 1: Fundamentals of Computational Chemistry*

- Introduction to Computational Chemistry
- Basic Theories and Models
- Quantum Chemistry Fundamentals
- Molecular Mechanics and Dynamics

Unit 2: Computational Techniques in Separation Science

- Overview of Separation Techniques (Chromatography, Electrophoresis, etc.)
- Computational Tools for Separation Processes
- Modeling of Separation Mechanisms
- Simulation of Separation Processes

Unit 3: Practical Applications and Case Studies

- Case Studies in Chromatography
- Computational Analysis of Electrophoresis
- Applications in Environmental and Pharmaceutical Separation
- Case Study: Separation of Complex Mixtures

Unit 4: Advanced Topics and Emerging Trends

- Advanced Computational Methods
- Machine Learning and AI in Separation Science
- Emerging Trends and Technologies
- Future Directions in Computational Chemistry and Separation Science

Practical Sessions (Demonstration)

- Hands-on Training with Computational Chemistry Software (e.g., Gaussian, AMBER, etc.)
- Simulation and Analysis of Separation Processes
- Data Interpretation and Report Writing
- Project Work: Solving Real-world Separation Problems

Duration of course: Ten weeks (30 Hours)

The Structure of Syllabus and system of evaluation -

Course	Theory Papers and Practical	Total Marks	
		Theory	Practical
Certificate Course in Computational Chemistry in Separation Science	Theory paper- Computational Chemistry in Separation Science * Theory examination will be of MCQ pattern having 40 questions each question carries 2 equal marks.	80	20
	* Practical examination will be based on performance evaluation in the laboratory	100	



Internal Quality Assurance Cell
(IQAC)
S. S. E. S. A. Science College
Congress Nagar, Nagpur.



Principal
S. S. E. S. Amravati's
Science College, Nagpur.

Certificate course in
Computational Chemistry in Separation Science
Department of Chemistry
Teaching Plan 2023-2024

Week	Hour Wise Teaching Plan	Content
Week-1 Theory 30 Hrs	Unit I 1	Introduction to Computational Chemistry
	1	Comparative Study of Computational Chemistry with Classical Chemistry.
	1	Basic Theories and Models
\Week-2	Unit II 1	Quantum Chemistry Fundamentals.
	1	Molecular Mechanics and Dynamics.
	1	Overview of Separation Techniques (Chromatography, Electrophoresis, etc.)
\Week-3,	Unit III 1	Computational Tools for Separation Processes Modeling of Separation Mechanisms, Simulation of Separation Processes
	1	Case Studies in Chromatography.
	1	Computational Analysis of Electrophoresis.
Week-4	1	Applications in Environmental and Pharmaceutical Separation.
	1	Case Study: Separation of Complex Mixtures
	1	Case Study: Separation of Complex Mixtures
Week-5	1	Computational Analysis of Electrophoresis
	1	Applications in Environmental and Pharmaceutical Separation
		Applications in Environmental and Pharmaceutical Separation
	1	Case Study: Separation of Complex Mixtures
Week-6	1	Case Study: Separation of Complex Mixtures
	Unit III 1	Advanced Computational Methods
Week-7	1	Machine Learning and AI in Separation Science
	1	Machine Learning and AI in Separation Science
	1	Emerging Trends and Technologies
Week-8	1	Emerging Trends and Technologies

	1	Future Directions in Computational Chemistry and Separation Science
	1	Future Directions in Computational Chemistry and Separation Science
Week-9	Unit IV 1	Hands-on Training with Computational Chemistry Software (e.g., Gaussian, AMBER, etc.)
	1	Simulation and Analysis of Separation Processes
	1	Data Interpretation and Report Writing
Week-10	1	Data Interpretation and Report Writing
	1	Project Work: Solving Real-world Separation Problems
	1	Project Work: Solving Real-world Separation Problems
	1	Exam For Certificate Course

Dr. Priyadarshani N. Deshmukh
Assistant Professor
Course coordinator
Department of Chemistry
S.S.E.S.A.'s Science College
Nagpur

S.S.E.S.A's Science College, Congress Nagar, Nagpur

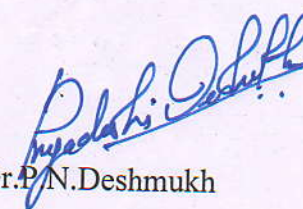
Department of Chemistry

Add-on certificate course (2023-2024)

TIME TABLE

Certificate Course: Computational Chemistry in Separation Science

Days	Time	
	Theory Classes	Practical Classes
Monday	-	-
Tuesday	-	-
Wednesday	-	-
Thursday	-	-
Friday	PND (C8) Theory 3.30 to 4.30 pm	PND Practical 4.35 to 5.35 pm -Chem Lab
Saturday	PND (C8) Theory 3.30 to 4.30 pm	-



Dr. P.N. Deshmukh

Course Coordinator

~~Assistant Professor~~

Department of Chemistry

S.S.E.S.A.'s Science College

Nagpur

Name of the Students.

Page No.

Date :

- ① Dighore Kartik Ganesh.
- ② D. W. Gavhade.
- ③ M. K. Gaidhane
- ④ D. S. Karande
- ⑤ A. M. Katore
- ⑥ P. R. Khadse
- ⑦ A. P. Khairkar.
- ⑧ K. G. Satore
- ⑨ P. S. Singh.
- ⑩ J. I. Sukhadere
- ⑪ P. D. Tirpude
- ⑫ J. V. Wadhive
- ⑬ H. D. Hande
- ⑭ M. S. Wankhade.
- ⑮ R. B. Bahire
- ⑯ S. M. Bokade
- ⑰ R. B. Gharvan.
- ⑱ G. S. Date
- ⑲ A. M. Dhek.
- ⑳ S. B. Faddas.
- ㉑ S. S. Gaikwad.
- ㉒ M. S. Gargelwar.
- ㉓ A. A. Gawande
- ㉔ L. S. Ghubade
- ㉕ T. S. Gonnade
- ㉖ M. V. Raut.
- ㉗ R. S. Sharma.
- ㉘ S. A. Shaikh.

Ganesh
Gavhade
Gaidhane
Karande
Katore
Khadse
Khairkar
Satore
Singh
Sukhadere
Tirpude
Wadhive
H. Hande
Wankhade
Bahire
Bokade
Gharvan
Date
Dhek.
Faddas
Gaikwad
Gargelwar
Gawande
Ghubade
Gonnade
Raut
Sharma
Shaikh

- (29) V. S. Shukla
 (30) A. Y. Sidam
 (31) P. C. Titarmare
 (32) R. V. Pawar
 (33) A. S. Rathod
 (34) A. P. Raut
 (35) R. V. Singh
 (36) A. G. Somkumar
 (37) S. S. Thakre
 (38) A. S. Tumsare
 (39) U. S. Attaram
 (40) S. R. Borkar
 (41) M. S. Chapke
 (42) A. S. Chaudhary
 (43) V. R. Chikram
 (44) P. P. Dhande
 (45) T. S. Gajpheije
 (46) G. V. Ghatge
 (47) G. M. Hedao
 (48) A. D. Shinde
 (49) M. H. Solanki
 (50) T. J. Sorde
 (51) S. P. Suthar
 (52) E. S. Tambhushkar
 (53) B. V. Vikey
 (54) A. N. Wanjari
 (55) S. D. Wankhade
 (56) D. G. Yadav

ShuklaAS1SidamPawarRathodRautSinghSomkumarThakreTumsareAttaramBorkarChapkeChaudharyChikramDhandeGajpheijeGhatgeHedaoShindeSolankiSordeSutharTambhushkarVikeyWanjariWankhadeYadav

- (57) S. Y. Giradkar.
- (58) T. B. Mandale
- (59) M. E. Rajput.
- (60) G. R. Bhise
- (61) M. S. Dhehankar
- (62) P. S. Dabey.
- (63) H. K. Aewiwale
- (64) S. S. Baghel.
- (65) T. H. Baig.
- (66) K. S. Barsagade
- (67) L. D. Bawankule
- (68) A. R. Basmole
- (69) T. P. Channe
- (70) P. A. Datir
- (71) J. V. Deshmukh.
- (72) S. N. Dhok.
- (73) R. S. Ayyagari
- (74) S. G. Bante.
- (75) K. R. Behar
- (76) C. D. Baisare
- (77) S. S. Bhimhe
- (78) V. C. Ghandhary.
- (79) I. S. Jogani
- (80) S. S. Jungare
- (81) U. D. Kader.
- (82) B. N. Kamdar.

Giradkar
Mandale
Meghna
Dar
M. D.
Dabey
Aewiwale
Baghel
Baig
Barsagade
Bawankule
Basmole
Channe
Datir
Deshmukh
Dhok
Ayyagari
Bante
Behar
Baisare
Bhimhe
Ghandhary
Jogani
Jungare
Kader
Kamdar

Name of the College / Institute - Shri Shivaji Education Society Amravati's Science College, Nagpur

Year (Duration)- 10 Weeks

[illegible]

[illegible]

Name of the College / Institute - Shri Shivaji Education Society Amravati's Science College, Nagpur

Name of the Course - Computational Chemistry in Separation Science

Year (Duration)- 10 Weeks

[illegible]

[illegible]

Name of the College / Institute - Shri Shivaji Education Society Amravati's Science College, Nagpur

Name of the Course - Computational Chemistry in Separation Science

Year (Duration)- 10 Weeks

[illegible]


S.S.E.S.A.'s Science College
Nagpur


S.S.E.S.A.'s Science College
Nagpur

Shri Shivaji Education Society Amravati's SCIENCE College, Congress Nagar, Nagpur.

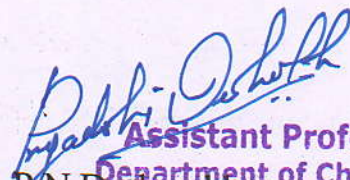
ADD-ON COURSE EXAMINATION (2023-2024)

Certificate Course: Computational Chemistry in Separation Science.

NOTICE

Date: 23/02/2024

All the registered students of the add-on Course on Computational Chemistry in Separation Science under the Department of Chemistry for the session 2023-24 are hereby informed that the **Theory examination** is to be scheduled on 27/02/2024 from 10:30 am to 11:30 am in the Chemistry classroom (C8) at our college center. Also, the Practical examination in Chemistry Lab A and Lab B is followed by the theory Examination All Students should be present in the Classroom and the laboratory before 10 mins of the scheduled time of examination.


Assistant Professor
Department of Chemistry
S.S.E.S.A.'s Science College
Nagpur
Dr. P.N. Deshmukh
Course Coordinator
Department of Chemistry.


Professor & Head
Department of Chemistry,
Shri Shivaji Science College
Congress Nagar, Nagpur.

S.S.E.S. Amt's Science College, Congress Nagar, Nagpur.

Department of Chemistry

Add-on (2023-2024)

Certificate Course:- Computational Chemistry in Separation Science.

Solve all questions. Each question carries 2 marks.

Time:- 1 hr.

Date:-27/02/2024

Marks:-80 M

- Which of the following is a fundamental concept of quantum chemistry?
A) Newton's Laws
B) Schrödinger Equation
C) Boyle's Law
D) Charles's Law
- Molecular mechanics primarily uses which type of force field to model molecular interactions?
A) Electromagnetic field
B) Gravitational field
C) Classical force field
D) Quantum force field
- In computational chemistry, the Born-Oppenheimer approximation separates which two types of motion?
A) Electronic and nuclear
B) Rotational and vibrational
C) Translational and rotational
D) Electronic and vibrational
- Which method is commonly used to calculate the electronic structure of molecules?
A) Density Functional Theory (DFT)
B) Classical Mechanics
C) Newtonian Dynamics
D) Kinetic Theory
- The primary purpose of molecular dynamics simulations is to study:
A) Static molecular structures
B) Molecular interactions over time
C) Quantum mechanical wave functions
D) Chemical reaction rates.
- Which separation technique involves the use of a stationary phase and a mobile phase?
A) Electrophoresis
B) Chromatography
C) Distillation
D) Filtration
- Computational tools for separation processes primarily aim to:
A) Simplify manual calculations
B) Model and optimize separation mechanisms
C) Replace laboratory experiments
D) Analyze reaction kinetics
- Retention time in chromatography can be predicted using:
A) Quantum mechanical models
B) Molecular mechanics simulations
C) Empirical correlations and computational models
D) Gravitational equations
- Electrophoresis is primarily used for the separation of:
A) Gaseous compounds
B) Large biological molecules
C) Metals
D) Crystals
- Which computational software is widely used for quantum chemical calculations?
A) Microsoft Excel
B) Gaussian
C) MATLAB
D) SPSS

11. In a case study involving chromatography, computational models help to:

- A) Design new chromatographic equipment
- B) Predict retention times and optimize separation conditions
- C) Analyze the legal aspects of chemical separations
- D) Improve software coding for simulations

12. The separation of complex mixtures often requires:

- A) Single-stage separation techniques
- B) Multiple-stage or multidimensional separation techniques
- C) Only manual intervention
- D) Non-computational approaches

13. Computational analysis of electrophoresis data can provide insights into:

- A) Electrical circuit design
- B) Molecular size and charge distribution
- C) Geological formations
- D) Astronomical distances

14. A key application of computational chemistry in pharmaceutical separation is to:

- A) Design new drugs
- B) Identify and quantify active pharmaceutical ingredients
- C) Conduct clinical trials
- D) Market pharmaceutical products

15. Which advanced computational method is increasingly used in separation science for pattern recognition and data analysis?

- A) Machine Learning
- B) Traditional Statistics
- C) Manual Data Entry
- D) Simple Regression

21. The application/applications of Artificial Intelligence is/are

- (A) Expert Systems
- (B) Gaming

16. Artificial Intelligence (AI) can enhance separation processes by:

- A) Performing physical separations
- B) Optimizing separation conditions through predictive modeling
- C) Replacing all human analysts
- D) Reducing the need for quality control

17. An emerging trend in computational chemistry involves the integration of:

- A) Traditional paper-based records
- B) Quantum computing techniques
- C) Manual chromatographic techniques
- D) Classical mechanical methods

18. One of the future directions in computational chemistry for separation science is:

- A) Reducing computational resources
- B) Increasing the complexity of manual calculations
- C) Developing more accurate and efficient computational models
- D) Decreasing automation in separation processes

19. Machine learning in computational chemistry helps to:

- A) Perform laboratory experiments
- B) Analyze large datasets and identify patterns
- C) Manually calculate molecular structures
- D) Replace chemical synthesis processes

20. Hands-on training in computational chemistry software aims to:

- A) Increase manual calculation skills
- B) Enable students to perform complex simulations and analyses
- C) Reduce the need for experimental validation
- D) Teach software development

(C) Vision Systems

(D) All of the above

22. Who is known as the -Father of AI"?

- (A)Fisher Ada
- (B)Alan Turing
- (C)John McCarthy
- (D)Allen Newell

23. In which chromatography stationary phase is more polar than mobile phase?

- (A). Ion exchange chromatography
- (B.) Normal phase chromatography
- (C.) Reversed chromatography
- (D.) Size exclusion chromatography.

24. In which type of chromatography, the stationary phase is held in a narrow tube and the mobile phase is forced through it under pressure?

- (A) Column chromatography
- (B) Planar chromatography
- (C) Liquid chromatography
- (D.) Gas chromatography

25.Which of the following guidelines are applicable to Analytical Method validation

- (A) ICH Q1
- (B) ICH Q2
- (C) ICH Q3
- (D) ICH Q4

26. In size exclusion chromatography, solute molecules are separated based on

- (A)Molecular geometry and size
- (B)Molecular composition
- (C) Molecular phase
- (D) Molecular formula

27. Ion exchange chromatography is based on?

- (A)Electrostatic attraction
- (B) Electrical mobility of ionic species
- (C)Partition chromatography
- (D)Adsorption chromatography.

28. Which method of separation will be used to separate butter from curd?

- (A) Sublimation
- (B) Chromatography
- (C)Centrifugation
- (D)All of the above

29. The process in which the heavier impurities settle at the bottom is ____.

- (A)Decantation
- (B)Sedimentation
- (C)Filtration
- (D)Evaporation

30.A report or account is an:

- (A) Informational work
- (B) Technical work
- (C) Professional work
- (D) None of these

31).The data proceed to support the recommendation should be:

- (A) Accurate
- (B) Unreliable
- (C) Incomplete
- (D) All of these

32)Report are often used to display the result of:

- (A) Experiment
- (B) Investigation
- (C) Inquiry
- (D) All of these

33.) Common formats for report writing are:

- (A) Introduction
- (B) Method
- (C) Both A and B
- (D) Inform

34). Which thing we need to do in writing report:

- (A) Record the survey not carry out
- (B) Record deleted data
- (C) Record the object
- (D) None

35). In report writing, the language used to be:

- (A) Loudly
- (B) Unclear
- (C) Whispers
- (D) Ambiguous

36). The report is always written in:

- (A) Sequential manner
- (B) Irregular manner
- (C) Horizontal manner
- (D) Data biased manner

37). Report writing by the individual should be written in:

- (A) First person
- (B) Last person
- (C) Both A, B
- (D) None

38) The length of the informal report should be:

- (A) 13 pages
- (B) 1-3 pages
- (C) 1/5-page
- (D) full page

39) Report should preferably write ____.

- (A) Sequential manner
- (B) Regular manner c
- (C) Irregular manner
- (D) None

40). Formal report can be categorized as ____.

- (A) Informational
- (B) Analytical
- (C) Recommendation
- (D) All of these


Assistant Professor
Department of Chemistry
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Nagpur

Shri Shivaji Education Society Amravati's
Science College Congress Nagar Nagpur
Department of Chemistry

Skill-Based Certificate course

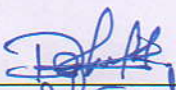
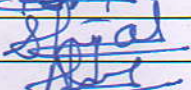
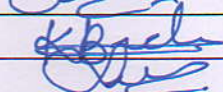
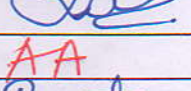
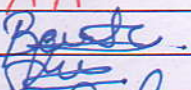
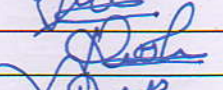
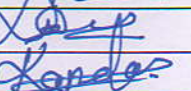
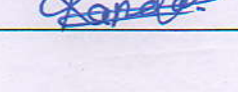
Title: "Computational Chemistry in Separation Science."
Attendance Sheet-2023-2024

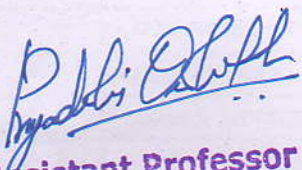
Course Coordinator: Dr. Priyadarshani N.Deshmukh.

Exam date:- 27/02/2024

Sr.No	Name of the Student	Signature
1	DIGHORE KARTIK GANESH	Ganesh
2	GAVHADE DRUTI WAMAN	Druti
3	GAIDHANE MEGHANA KISHOR	Meghane
4	KARANDE DHARINI SHYAM	Dharini
5	KATARE ANJESH MUKESH	Anjesh
6	KHADSE PRANAY RAMESH	Pranay
7	KHAIRKAR ANIMESH PAWAN	Animesh
8	SATARE KALYANI GAJANAN	Kalyani
9	SINGH PRIYA KUMARI SANTOSH	Priya
10	SUKHADEVE JIYA ISHWAR	Jiya
11	TIRPUDE PRASHIK DEWANAND	Prashik
12	WADHIVE JANHAVI VASANTA	Janhavi
13	WANDHE HIMANSHU DINESH	Himanshu
14	WANKHADE MRUNAL SUNIL	Mrunal
15	BAHIRA RANI BASANT	Rani
16	BOKADE SANIKA MANOJ	Sanika
17	CHAVHAN RAKHI BHARAT	Rakhi
18	DATE GAURI SUNIL	Gauri
19	DHEK AISHWARYA MADAN	Aishwarya
20	FADDAS SAJANI BAPURAV	Sajani
21	GAIKWAD SNEHA SAMBHAJI	Sneha
22	GARJELWAR MANSI SURENDRA	Mansi
23	GAWANDE AYUSHRI ANIL	Ayushri
24	GHUBADE LEYNESHA SANJAY	Leynesha
25	GONNADE TILAK SANTOSH	Tilak
26	RAUT MOHINI VINOD	Mohini
27	SHARMA RASHI SANDEEP	Rashi
28	SHEIKH SHAHINA AKIL	Shahina

29	SHUKLA VAISHNAVI SANJAY	<u>Shukla</u>
30	SIDAM ASHWINI YUVRAJ	<u>Ash</u>
31	TITARMARE PRANAV CHANDRAKANT	<u>Pranav</u>
32	PAWAR RADHA VINOD	<u>Radha</u>
33	RATHOD ADITI SANJAY	<u>Aditi</u>
34	RAUT ANUSHKA PRAMOD	<u>Raut</u>
35	SINGH RIYA VIRENDRA KUMAR	<u>Singh</u>
36	SOMKUWAR AVANTIKA GHANSHYAM	<u>Somkumar</u>
37	THAKRE SAKSHI SUDHIR	<u>Thakre</u>
38	TUMSARE ANKITA SURYABHAN	<u>Tumsare</u>
39	ATRAM UNNATTI SHASHIKANT	<u>Atram</u>
40	BORKAR SEJAL RAJESH	<u>Borkar</u>
41	CHAPKE MOHINI SHANKAR	<u>Chapke</u>
42	CHAUDHARY AYUSH SHRICHAND	<u>Chaudhary</u>
43	CHIKRAM VAIDAVI ARVIND	<u>Chikram</u>
44	DHANDE PRABUDHA PRADIP	<u>Dhande</u>
45	GAJBHIYE TANISHA VISHWAJIT	<u>Gajbhiye</u>
46	GHATURLE GRISHMA VINOD	<u>Ghaturle</u>
47	HEDAOO GAYATRI MANOJ	<u>Hedao</u>
48	SHINDE AMIT DEEPAKRAO	<u>Shinde</u>
49	SOLANKI MOHAK HITESH	<u>AA</u>
50	SORDE TANSHREE JAGDISH	<u>Teju</u>
51	SUTHAR SANGITA PUKHRAJ	<u>S. Suther</u>
52	TAMBUSKAR EKTA SANJAY	<u>Ekta</u>
53	UIKEY BHUVNESHWARI UMESH	<u>Uikey</u>
54	WANJARI APEKSHA NAGSEN	<u>Wanjari</u>
55	WANKHEDE SHREYA DNYANESHWAR	<u>Wankhe</u>
56	YADAV DIPESH GYANESHWAR	<u>Yadav</u>
57	GIRADKAR SWASTIK YASHWANT	<u>Giradkar</u>
58	MANDALE TANVI BABAN	<u>Mandale</u>
59	RAJPUT MADHURA CHANDRASHEKHAR	<u>Madhura</u>
60	BHISE GAYATRI RAVI	<u>Bhise</u>
61	DEHANKAR MANISHA SHASHIKANT	<u>Dehankar</u>
62	DUBEY POONAM SUSHIL	<u>Dubey</u>
63	ARVIWALA HUZEFA KHUZEMA	<u>AA</u>
64	BAGHEL SONAM SANTOSHKUMAR	<u>Baghel</u>
65	BAIG TASMIYA HAMID	<u>Baig</u>
66	BARSAGADE KALASH SUDHAKAR	<u>Bharya</u>
67	BAWANKULE LAXMI DEVIDAS	<u>Bawankule</u>
68	BHASMOTE ARADHANA RAJENDRA	<u>Basmote</u>
69	CHANNE TANISHKA PRAVEEN	<u>Channe</u>
70	DATIR PRANJALI ANKALESH	<u>Datir</u>

71	DESHMUKH JANHAVI VIRENDRA	
72	DHOK SOKSHAM NISHANT	
73	AYYAGARI RENUKA SUDHAKAR	
74	BANTE SHRADDHA GUDDU	
75	BEHAR KHUSHI RAJU	
76	BHAISARE CHETANA DINESH	
77	BHIMTE SHRIYA SURENDRAKUMAR	AA
78	CHOUDHARY VAISHNAVI CHANDRAKANT	
79	JOGANI ISHA SURAJ	
80	JUNGHARE SANCHIT SHESHRAO	
81	KADU UNNATI UMESH	
82	KAMDAR SURBHI NARESH	


Assistant Professor
Department of Chemistry
S.S.E.S.A.'s Science College
Nagpur

RASHTRASANT TUKADOJI MAHARAJ, NAGPUR UNIVERSITY, NAGPUR

Name of the College / Institute - Shri Shivaji Education Society Amravati's Science College, Nagpur

Name of the Course - Computational Chemistry in Separation Science

Year (Duration)- 10 Weeks

Result of Skill-Based Course:- Computational Chemistry in Separation Science.

Sr.No.	Name of the Student	Roll. No	Theory Marks	Practical Marks	Total Marks	Grade
1	DIGHORE KARTIK GANESH	CC-1	80	19	99	O
2	GAVHADE DRUTI WAMAN	CC-2	76	18	94	O
3	GAIDHANE MEGHANA KISHOR	CC-3	76	20	96	O
4	KARANDE DHARINI SHYAM	CC-4	24	15	39	P
5	KATARE ANJESH MUKESH	CC-5	56	18	74	A
6	KHADSE PRANAY RAMESH	CC-6	22	8	30	P
7	KHAIRKAR ANIMESH PAWAN	CC-7	64	8	72	A
8	SATARE KALYANI GAJANAN	CC-8	72	17	89	A+
9	SINGH PRIYA KUMARI SANTOSH	CC-9	78	8	86	A+
10	SUKHADEVE JIYA ISHWAR	CC-10	78	9	87	A+
11	TIRPUDE PRASHIK DEWANAND	CC-11	34	19	53	B
12	WADHIVE JANHAVI VASANTA	CC-12	54	18	72	A
13	WANDHE HIMANSHU DINESH	CC-13	62	15	77	A
14	WANKHADE MRUNAL SUNIL	CC-14	44	12	56	B
15	BAHIRA RANI BASANT	CC-15	52	8	60	B
16	BOKADE SANIKA MANOJ	CC-16	32	11	43	P
17	CHAVHAN RAKHI BHARAT	CC-17	60	10	70	B+
18	DATE GAURI SUNIL	CC-18	28	11	39	P
19	DHEK AISHWARYA MADAN	CC-19	40	17	57	B
20	FADDAS SAJANI BAPURAV	CC-20	52	19	71	A
21	GAIKWAD SNEHA SAMBHAJI	CC-21	80	9	89	A+
22	GARJELWAR MANSI SURENDRA	CC-22	18	15	33	P
23	GAWANDE AYUSHRI ANIL	CC-23	42	17	59	B
24	GHUBADE LEYNESHA SANJAY	CC-24	32	17	49	C
25	GONNADE TILAK SANTOSH	CC-25	18	14	32	P
26	RAUT MOHINI VINOD	CC-26	60	20	80	A
27	SHARMA RASHI SANDEEP	CC-27	24	15	39	P
28	SHEIKH SHAHINA AKIL	CC-28	46	20	66	B+
29	SHUKLA VAISHNAVI SANJAY	CC-29	48	12	60	B+
30	SIDAM ASHWINI YUVRAJ	CC-30	34	17	51	C
31	TITARMARE PRANAV CHANDRAKANT	CC-31	62	15	77	A
32	PAWAR RADHA VINOD	CC-32	28	17	45	P
33	RATHOD ADITI SANJAY	CC-33	46	18	64	B+
34	RAUT ANUSHKA PRAMOD	CC-34	80	11	91	O
35	SINGH RIYA VIRENDRA KUMAR	CC-35	68	14	82	A+

36	SOMKUWAR AVANTIKA GHANSHYAM	CC-36	20	16	36	P
37	THAKRE SAKSHI SUDHIR	CC-37	34	16	50	C
38	TUMSARE ANKITA SURYABHAN	CC-38	46	9	55	B
39	ATRAM UNNATTI SHASHIKANT	CC-39	54	12	66	B+
40	BORKAR SEJAL RAJESH	CC-40	58	15	73	A
41	CHAPKE MOHINI SHANKAR	CC-41	46	11	57	B
42	CHAUDHARY AYUSH SHRICHAND	CC-42	46	16	62	B+
43	CHIKRAM VAIDAVI ARVIND	CC-43	74	17	91	A+
44	DHANDE PRABUDHA PRADIP	CC-44	22	10	32	P
45	GAJBHIYE TANISHA VISHWAJIT	CC-45	70	8	78	A
46	GHATURLE GRISHMA VINOD	CC-46	20	19	39	P
47	HEDAOO GAYATRI MANOJ	CC-47	34	12	46	C
48	SHINDE AMIT DEEPAKRAO	CC-48	78	14	92	O
49	SOLANKI MOHAK HITESH	CC-49	AA	AA	AA	AA
50	SORDE TANSHREE JAGDISH	CC-50	42	17	69	B
51	SUTHAR SANGITA PUKHRAJ	CC-51	16	9	25	P
52	TAMBUSKAR EKTA SANJAY	CC-52	24	11	36	P
53	UIKEY BHUVNESHWARI UMESH	CC-53	34	13	47	C
54	WANJARI APEKSHA NAGSEN	CC-54	60	9	69	B+
55	WANKHEDE SHREYA DNYANESHWAR	CC-55	46	16	62	B+
56	YADAV DIPESH GYANESHWAR	CC-56	66	19	85	A+
57	GIRADKAR SWASTIK YASHWANT	CC-57	24	14	38	P
58	MANDALE TANVI BABAN	CC-58	60	12	72	A
59	RAJPUT MADHURA CHANDRASHEKHAR	CC-59	78	14	92	O
60	BHISE GAYATRI RAVI	CC-60	68	20	88	A+
61	DEHANKAR MANISHA SHASHIKANT	CC-61	72	19	91	O
62	DUBEY POONAM SUSHIL	CC-62	34	15	49	C
63	ARVIWALA HUZEFA KHUZEMA	CC-63	AA	AA	AA	AA
64	BAGHEL SONAM SANTOSHKUMAR	CC-64	22	10	32	P
65	BAIG TASMIYA HAMID	CC-65	40	9	49	C
66	BARSAGADE KALASH SUDHAKAR	CC-66	48	14	62	B+
67	BAWANKULE LAXMI DEVIDAS	CC-67	32	20	52	B
68	BHASMOTE ARADHANA RAJENDRA	CC-68	58	13	71	A
69	CHANNE TANISHKA PRAVEEN	CC-69	48	14	62	B+
70	DATIR PRANJALI ANKALESH	CC-70	40	17	57	B
71	DESHMUKH JANHAVI VIRENDRA	CC-71	22	17	39	P
72	DHOK SOKSHAM NISHANT	CC-72	56	13	69	B+
73	AYYAGARI RENUKA SUDHAKAR	CC-73	78	11	89	A+
74	BANTE SHRADDHA GUDDU	CC-74	70	20	90	O
75	BEHAR KHUSHI RAJU	CC-75	28	18	46	C
76	BHAISARE CHETANA DINESH	CC-76	28	10	38	P
77	BHIMTE SHRIYA SURENDRAKUMAR	CC-77	AA	AA	AA	AA

78	CHOUDHARY VAISHNAVI CHANDRAKANT	CC-78	62	19	81	A+
79	JOGANI ISHA SURAJ	CC-79	34	15	49	C
80	JUNGHARE SANCHIT SHESHRAO	CC-80	34	19	53	B
81	KADU UNNATI UMESH	CC-81	28	9	37	P
82	KAMDAR SURBHI NARESH	CC-82	50	13	63	B+

P. N. Deshmukh

Dr.P.N.Deshmukh

Assistant Professor
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Nagpur



Shri Shivaji Education Society, Amravati's

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Mentor College under 'PARAMARSH Scheme', UGC, New Delhi

Add-on Course

Course Exam Name: Certificate Course on Computational Chemistry in Separation Science

Name of Student:

Kartik B. Dighe

Roll No.:

CC-1

Session: 2023-24

Test Date: 27/02/2024

Max. Marks: 40

Invigilator Signature

Obtained Marks:

80

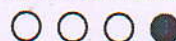
INSTRUCTIONS FOR FILLING THE SHEET

1. This sheet should not be folded or crushed.
2. Use only blue/ black ball point pen to fill the circles.
3. Use of pencil is strictly prohibited.
4. Circles should be darkened completely and properly.
5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS



CORRECT METHOD



A B C D	A B C D	A B C D	A B C D	A B C D
1 ☒ ☐ ☐ ☐	11 ☒ ☐ ☐ ☐	21 ☐ ☐ ☐ ☒	31 ☒ ☐ ☐ ☐	41 ☐ ☐ ☐ ☐
2 ☐ ☐ ☒ ☐	12 ☐ ☒ ☐ ☐	22 ☐ ☐ ☒ ☐	32 ☐ ☐ ☐ ☒	42 ☐ ☐ ☐ ☐
3 ☒ ☐ ☐ ☐	13 ☐ ☒ ☐ ☐	23 ☐ ☒ ☐ ☐	33 ☐ ☒ ☒ ☐	43 ☐ ☐ ☐ ☐
4 ☒ ☐ ☐ ☐	14 ☐ ☒ ☐ ☐	24 ☒ ☐ ☐ ☐	34 ☐ ☒ ☒ ☐	44 ☐ ☐ ☐ ☐
5 ☐ ☒ ☐ ☐	15 ☒ ☐ ☐ ☐	25 ☐ ☒ ☐ ☐	35 ☐ ☐ ☐ ☒	45 ☐ ☐ ☐ ☐
6 ☐ ☒ ☐ ☐	16 ☐ ☒ ☐ ☐	26 ☒ ☐ ☐ ☐	36 ☒ ☐ ☐ ☒	46 ☐ ☐ ☐ ☐
7 ☐ ☒ ☐ ☐	17 ☐ ☒ ☐ ☐	27 ☐ ☒ ☐ ☐	37 ☒ ☐ ☐ ☐	47 ☐ ☐ ☐ ☐
8 ☐ ☐ ☒ ☐	18 ☐ ☐ ☒ ☐	28 ☐ ☐ ☒ ☐	38 ☐ ☒ ☐ ☐	48 ☐ ☐ ☐ ☐
9 ☐ ☒ ☐ ☐	19 ☐ ☒ ☐ ☐	29 ☐ ☒ ☐ ☐	39 ☒ ☐ ☐ ☐	49 ☐ ☐ ☐ ☐
10 ☐ ☒ ☐ ☐	20 ☐ ☒ ☐ ☐	30 ☒ ☐ ☐ ☐	40 ☐ ☐ ☐ ☒	50 ☐ ☐ ☐ ☐



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CERTIFICATE

Mr./Ku. Kartik G. Dighore is awarded with certificate on successful completion of the course entitled, Certificate course in Computational Chemistry in Separation Science.

Session 2023-24 under Add-on course conducted for 30 hours from 15/12/2023 to 24/02/2024 by Department of Chemistry, SSES's, Science College, congress Nagar, Nagpur 440012.

He/She has passed the Examination with A⁺ Grade.

Dr. P. N. Deshmukh
Coordinator, Department of Chemistry

Prof. M. P. Dhole
Principal, Science College, Nagpur