

**DEPARTMENT OF CHEMISTRY
REPORT OF FIRST TERM 2020-21**

Name of Staff:

Senior College:

1. Dr. I.Mendes, Head of Dept.
2. Dr. P.Shetty
3. Ms. R.Ferns
4. Dr. S.Murthy
5. Ms. T.Asha
6. Ms. L.Jeysus
7. Sr. R.Khandagale

Junior College:

1. Ms. B. Gonsalves
2. Ms. S.Rathod
3. Ms. B.Shaikh

A] TEACHING AND LEARNING:

I] Teaching Aids used: In order to make the study of chemistry simple and interesting, a variety of teaching aids are used by the staff. These include:

- i. Ball and stick molecular models, solid state models, chemistry molecular model kit:** Molecular models (made at home) give a 3-D view of the molecule and thus help students to visualize the molecule and understand the molecular structure better. These were used for topics like stereochemistry-LJ, SM, molecular symmetry-RF
Sample thief working model -PS
- ii. Practical demonstrations:** For vinegar estimation, video recording of the experiment done by Sr. Rajani (on campus faculty member) was shared with the students.
- iii. Use of PowerPoint presentations by staff:**
Powerpoint presentations were prepared for all the topics and subtopics in the syllabus -IM, PS, SM, RF, TA, RK, LJ
- iv. Creative activities used for teaching chemistry:**
 - Creating Youtube video: Students were asked to make a video demonstrating coning and quartering method of sub -sampling using household material-PS
 - Resource generation and review exercise: The students of TYBSc class were asked to refer to online sources for the topics Ion exchange chromatography and sampling of solids and liquids. This was then reviewed by their classmates for its quality. This entire exercise made them go through a lot of reference material which inturn helped them revise their concept. -PS

- Creating illustration/ infograph using suitable app on Principle of anion exchange chromatography for TYBSc and Environmental Chemistry for SYBSc-PS
 - Creating interactive concept map: The students were asked to prepare a concept map for the topic sampling and sampling probes used for solids, liquids and gases using any suitable application and also for organic solid-solid separation - PS SM
 - Generating MCQ's: The students were shown a slide on some concepts of HPLC and asked to generate MCQ's-PS.
 - A number of informal tests were conducted during/after the lectures using applications like kahoot, Quizz, testmoz, Google form, microsoft forms, H5P, wordmint-PS, TA, LJ, RK, SM
 - Open book test were given in TYBSc class which served as revision for topics-TA, LJ
 - Use of a jamboard and comic strip for brainstorming. -PS
 - An application Doceri was used for all the organic lectures- SM
 - Chemdraw was used to demonstrate orbital overlap and FMO theory for pericyclic reactions.-LJ
 - A film was screened on Bhopal gas tragedy for SYBSc class-PS
 - Quiz on basic apparatus in chemistry, MSDS, Significant figures. -PS
 - % composition calculator, concentration calculator app, molecular generator. -PS
 - Flipped classroom: videos and PDF were sent before the classroom and then the topic was discussed in the class.-PS,LJ, SM
 - Padlet for resource generation-PS, LJ.
 - Peer teaching: organised PPT presentation by TYBSc 6U students on the following topics -IM:
 - a. Drugs used in COVID care.
 - b. Use of sanitizers and soaps in killing coronavirus.
 - c. Applications of Reverse Osmosis.
 - d. Recent Advances in Nuclear Fission for peaceful purposes.
 - e. Uses of Nuclear Fission for peaceful purposes.
 - SYBSc students published illustrations on OER Commons. (Google sheet link given below) PS
- <https://drive.google.com/file/d/1bHVGCrXF03wLY5vEaN-9P8Cnm4ozl3eM/view?usp=sharing>
- Use of Flash Cards to teach 'Catalysts and Reagents' - SM
 - Used breakout rooms in peer teaching method for reaction conversions in 'Catalysts and Reagents' chapter.

v. Other teaching strategies

Worksheets were provided to students on topics like:

- 2.5d, 4d and Q test, Null hypothesis:T-test and F-test, Graphical representation of data: Method of averages, method of least squares. Confidence limit, confidence interval, normality, molarity, ppm, interconversion of concentration units, empirical formula, mole fraction and percentage composition. Single step, multistep extraction and percentage extraction. Distribution of solute in counter current extraction for TYBSC class-PS

- Types and sources of errors, Mean, median, standard deviation, range, variance, deviation, relative average deviation, error: absolute error and relative error and significant figures for SYBSC class -PS
- Thermodynamics, chemical kinetics and chemical calculations for FYBSc class-TA
- IUPAC Nomenclature, ozonolysis, Hofmann exhaustive methylation, pericyclic reactions, formal charge and Lewis dot structures and hybridisation for FYBSc and TYBSc classes-LJ
- Worksheets on nomenclature, stereochemistry Organometallics, etc - SM
- Students were asked to make creative methods of presenting a topic via infographs, pictographs using various online app like Miro etc. SM
- Polls were conducted during the lectures to test the understanding of a concept just taught SM
- Notes were given for all the topics SM

II] Teaching learning in the laboratory (Virtual Practicals) :

- Since we are using the online mode for teaching, the practical syllabus was covered using the following:
 - Simulations or you tube videos were used to demonstrate practicals for all the classes.- IM, PS, SM, RF,TA, RK, LJ
 - Real lab procedures and readings were shared for all the experiments. The students then performed calculations using this data.- IM, PS, RF, SM, TA,LJ, RK
 - For vinegar and washing soda experiment applets were shared to study the effect of concentration and volume of the titrant and titrand on the nature of graph-PS
 - For vinegar estimation, video recording of the experiment done by Sr. Rajani (on campus faculty member) was shared with the students.
 - Interactive worksheets based on the experiment were shared.
 - Students were also assigned into breakout rooms to interact and solve a quiz, worksheet based on the experiment. -LJ, RK
 - Pre-lab and post-lab assignments-PS
 - TY B.Sc Practicals were conducted with the help of interactive online tool ‘whimsical’ to help understand and generate the workflow for solid solid organic separation.

III] Teaching chemistry- Beyond the classroom: In working towards the College mission of providing holistic growth to students, the chemistry department organises a variety of activities for the students. These activities aim at exposing students to frontier areas of chemistry beyond the syllabus.

i) Invited lectures:

- ‘E-mask: Protecting yourself online’ by Mr Sachin Dedhia on 3rd June 2020.
- ‘Staying healthy during Covid-19 times’ by Dr. Mukesh Gupta on 4th June 2020.

- ‘SARS-CoV-2 Updates: Vaccine and treatment’ National level webinar by Dr Sai Ram and Dr. Rajesh Medisetty on 15th June 2020.
- ‘Secrets of effective communication’ by Mr.Robin Fernandes on 20th June 2020
- ‘Taking the right decision for a bright career in chemistry’ by Dr. Prabodh Chobe on 24th October 2020

ii) Literature surveys/ research work under EXSP program-

a) Literature surveys:

- ‘Stereochemistry in Drug Action’-Ms Priya Naik and Ms Naba Patel-LJ
- ‘Multidimensional Aspects of Organocatalysts-Ms Lopamudra Panja and Ms Tulip Perreira -LJ
- Organized the Literature Survey Component presentations on 9th November 2020 - SM

b) Research projects: NIL

iii) Chemistry Club: Sr. R.Khandagale and Ms. L.Jeysus are the co-coordinators of the club for 2019-20. Activities organized in the College:

An online quiz based on Covid-19 was conducted for the Junior College students to make them aware of the virus, symptoms and precautions to be taken for the disease on 8th August 2020. A total of 69 students participated.

Ms Tanaz Asha and the MSc Part II students helped with the making and implementation of the Quiz.

Timetable Committee: Helped in formulating the timetable for online classes of FY, SY and TY- SM

iv) Field trips: Nil

IV] Other activities organized by the Department:

i) Creating awareness:

An E- quiz “ENVIRO KNOWLEDGE” for students by Chemistry department in collaboration with IQAC to celebrate World Environment Day on 5th June,2020 - TA

ii) Student development activities: : As the students were given various assignments, it increased their knowledge of the subject and they learnt how to generate resources and use a wide variety of applications effectively.

iii) Student follow up through contact group: Students studying chemistry are assigned a contact teacher who follows up their academic progress/ problems through the year. At SY level the practical teacher is the contact teacher.

iv) **Staff –student fun activities:** Teachers Day celebration on 5th September 2020 with the TYBSc Class.

v) **Others:** Nil

B| STAFF ACTIVITIES:

I| Workshops, seminars, conferences, talks attended/organised in the college:

- Attended and helped organising the following activities:
 - Webinar on ‘E-mask: Protecting yourself online’ by Sachin Dedhia organised by Chemistry department in collaboration with NSS on 3rd June 2020 –IM, PS, RF, SM, TA, LJ, RK
 - Webinar under DBT Star College Scheme on ‘Staying healthy during Covid-19 times’ by Dr. Mukesh Gupta on 4th June 2020. IM, PS, RF, SM, TA, LJ, RK
 - National Webinar under DBT Star College Scheme on ‘SARS-CoV-2 Updates: Vaccine and treatment’ by Dr Sai Ram and Dr. Rajesh Medisettyon 15th June 2020- IM, PS, RF, SM, TA, LJ, RK
- Webinar on ‘First Aid to your rescue’ by Mr Bhushan Harne organised by NSS Unit Sophia College on 17th June 2020- RF, TA, LJ
- Webinar on ‘Secrets of effective communication’ by Mr Robin Fernandes organised by the Chemistry department on 20th June 2020. -PS, RF, SM, TA, LJ, RK
- Attended a webinar on ‘Yoga: Finding calm in the chaos’ organised by the NSS unit of Sophia College on the International Yoga Day 20th June 2020. -PS, RF, TA,
- Attended a webinar on ‘Celebration of Women in Science-Rosalind Franklin, the woman behind the discovery of DNA structure’ organised by the Life science department of Sophia College under DBT star college scheme on 25th July 2020. -PS.
- Attended Teachers Day 2020 Celebration via Zoom on 5th September 2020. -IM, PS, RF, TA, LJ, RK
- Webinar for UG and PG students of the college on ‘Taking the right decision for a bright career in chemistry’ by Dr. Pabodh Chobe on 24th October 2020 -IM PS, RF, SM TA, LJ. RK.
- Conducted 5th Chemistry Board of Studies Meeting via Zoom on 5th November 2020. -IM, PS, RF, SM, TA, LJ, RK
- Presentations of EXSP literature review on 9th November 2020. -SM, LJ
- College Day 2020 Celebration via Zoom on 12th December 2020. IM, PS, RF, SM, TA, LJ, RK.

- Department meeting via zoom on 29th June, 13th October, 11th September and 24th November 2020.-IM, PS, RF, SM, TA, LJ, RK.

III] Workshops seminars, conferences, talks,etc. attended outside the college:

- Webinar on ‘Drug Discovery and Development: Challenges and Opportunities’ on 1st June 2020-SM
- Session on ‘Art Therapy internship program’ organized by Department of Mental Health and Behavioural Sciences, Fortis Healthcare on 2nd June 2020- RK
- Webinar on ‘Reimagining our relationship with nature’ organized by IFAT India on World Environment Day on 5th June 2020 - SM
- Webinar on ‘Fostering Research Environment in Academic Environment’ by S S Sanstha Jalgaon on 6th June,2020-TA
- Webinar on ‘Marine fungi: A source of future Cosmoceuticals’ organized by Mycological Society of India, Mumbai Unit on 6th June,2020-TA
- Course on Health Awareness and communicable disease organized by Savitribai Phule University, Pune on 7th June 2020 -TA
- Webinar on “Life skills after the covid-19 lockdown ends: a holistic wellness insight" organized by G N Khalsa College, Mumbai on 9th June,2020-TA, RK.
- Webinar on ‘Nirmal Swasthya: Webinar for nutritional and lifestyle empowerment of community’ organized by Nirmala Niketan on 9th ,13th and 15th June 2020-PS
- Webinar on ‘Enchanting World of Perfumes’ organized by Department of Chemistry K.C. College on 13th June 2020.-LJ
- Webinar on ‘Urban Biodiversity in Concrete Jungle’ organized by RD & SH National College on 13th June, 2020- TA
- Webinar on ‘Virtual Classrooms: The New Normal’ organized by the U.S. Consulate General, Mumbai in collaboration with the United States India Educational Foundation (USIEF) on 17th June 2020-LJ, RK
- Yoga meditation workshop organized by Yoga Department of Andhra University in collaboration with Yogoda Satsanga Society of India on June 17th 2020-SM
- Webinar on ‘Holistic approach to education- Yoga protocol workshop’ organized Jointly by University of Mumbai, HSNC Board, HSNC University and Kaivalyadham on 18th June 2020-RF
- Four day series “Knowledge for All” By Burhani College,Mumbai- TA
- Webinar on ‘Enchanting Eclipses-Science, Myth and Culture’ organised by Nehru science Centre on 19th June 2020.-LJ
- Guidance and Counselling for wellbeing, organized by Meerut College and Meston college of education, TN on 20th June 2020 – RK.
- Webinar on ‘Copyright concerns and challenges for online education’ organised jointly by VES and ICT, Mumbai on 15th July 2020.-PS

- Webinar on ‘Techniques of acquiring API scores and submitting PBAS for University/ College teachers’ on 24th June 2020-TA
- Webinar on ‘Painting And Colours In Everyday Day Life’ organised by HSNC University's K.C College on 18th July 2020-LJ
- **National level**
- Webinar ‘Nurture Nature of our future’ organized by Devkiba college .Silvassa on 5th June,2020- TA
- One-day seminar ‘Post teaching COVID scenario with Google classroom’ organized by SNNC college, Dhule on 7th June 2020- TA
- Webinar on ‘Soft skills and creative thinking in Physical and chemical sciences’ organized by ACS college, Yawal on 8th June 2020-TA
- Webinar on ‘Steering HEI’s in the wake of Covid-19’ organized by VES college from 9th to 12th June 2020-PS
- Webinar on ‘Managing Career post pandemic 2020’ organized by MMK College of Commerce and Economics in collaboration with BIAP on 10th June 2020-LJ.
- Web conference on ‘Synthesis of Nanomaterials and their Properties Enhancement’ organized by Department of Chemistry of BNN College on 11th June 2020- TA, LJ, RK
- Webinar on ‘Importance of Spectroscopy in NET examination’ by Prof.P.S.Kalsi organized by Department of Chemistry and Physics, Government Arts College(A) Salem, Tamil Nadu on 12th June 2020- LJ,RK.
- One day workshop on ‘Blended Learning’ organized by Department of educational technology of SNTD Womens University,Mumbai on 13th June 2020-TA,LJ,RK
- Webinar on ‘Methods of isolation and purification of bioactive compounds from medicinal plants and it’s in vivo studies’ organized by GKS College on 13th June 2020-RF
- Web conference on ‘Writing Resarch Paper: An Art’ organized by Department of Chemistry of BNN College on 18th June 2020-LJ
- Webinar on “War and Peace! Redefining Life” by Dr. Harish Shetty organised by Bunts Sangha webinar on 10th July 2020-PS
- One week online full time workshop Learning Management System: Moodle organised by the SNTD Women’s University, Mumbai from 27th June -2nd July 2020-PS,TA
- Webinar on ‘Scintillating Chemistry’ organised by Association of Chemistry Teachers on 28th June 2020.-LJ
- Three-day National Webinar Chemistry- Concepts and Career Opportunities organized by SIWS college, Muumbai on 16, 17and 18 July2020-TA
- World Conference on ‘Role of Medicinal Chemistry in the current scenario’ organised by the National research centre, Egypt from 3rd -5th July 2020. PS
- Webinar on ‘Green Approaches in Drug Discovery’ organised by Sawarkar Mahavidyalaya on 13th August 2020-LJ
- International Day of Yoga Celebrations from June 06 - 21, 2020 on the topic of “Inner

Peace Through Yoga Meditation” session conducted by Swamiji Smarananda Giri conducted by Amity University, Webinar Series on June 20, 2020- SM

- Drug Discovery: Challenges and Opportunities, Vivek College of technical Education Bijnor UP, 1st June 2020

International level

- Webinar on “Nanomaterial for smart and Sustainable energy” organized by MPASC, Panvel on 8th June,2020-TA
- Webinar on ‘From minerals to futuristic functional materials’ organised by St. Joseph College, Bangalore on 10th June 2020.-RF, TA
- Webinar on ‘Covid 19: Post Pandemic Challenges of Environment Management’ Socleen in association with D.G.Ruparel College on 22nd June 2020.-LJ
- Webinar on ‘Emerging Trend in Chemistry Education and Research’ Wilson College in association with ACT from 25th and 26th June 2020-LJ
- Webinar on ‘Science in Ancient India: Reality vs Myth’ by Prof. Soumitro Banerjee on 28th June 2020-LJ
- Two day International Webinar on Emerging Trends in Chemistry Education and Research organized by Wilson College, Mumbai on 25th and 26th June 2020.-TA
- International Webinar in Bridging Research perspective 2020 organized by Government Vidharbha Institute Amravati on 15th to 17th July,2020-TA
- One week International short term course on Soft skill & Personality development organized by Bharathiar University, Tamil Nadu from 24th to 30th July,2020- TA
- International E-conference on Multifunctional Advanced Material organized by Mahatma Gandhi College, Armori on 7th August,/2020

III] Contribution to Department and College administration/activities:

i) Dr I Mendes:

- a) Head of Department.
- b) Chairman, BOS-Chemistry Sophia College (Autonomous)

ii) Dr P Shetty

- a) Member of BOS-Chemistry Sophia College (Autonomous)
- b) Science stores In-charge
- c) M.Sc Part II class In-charge
- d) Member of Academic audit committee
- e) RUSA research committee member
- f) MSc exam committee member
- g) IQAC-CAS sub-committee member
- i) LMS Technical Committee member for deciding the best LMS for the College.

j) In charge for keeping Alumni record

iii) Ms. R Ferns

- a) Member of BOS-Chemistry Sophia College (Autonomous)
- b) S.Y.B.Sc. class In-charge.
- c) NSS Program Officer.

iv) Dr S Murthy:

- a) Co-ordinator- for the College (Star Status)
- b) Member of BOS-Chemistry Sophia College (Autonomous)
- c) Co-ordinator, EXSP program
- d) Co-ordinator, Time Table Committee
- e) Member, Admission Committee
- f) M.Sc Part-I In-charge

v) Ms. T Asha:

- a) Member of BOS-Chemistry Sophia College (Autonomous)
- b) Member, Sigma Club
- c) Member, Exam Committee
- d) Member, Magazine Committee
- e) T.Y.B.Sc. Class In-charge
- f) Co-ordinator, IQAC sub- committee for workshops
- g) Member, Nature Club
- h) Teacher -in charge, CUC
- i) Member and admin on the official zoom committee (from July to Sept 2020)

vi) Ms L.Jeysus

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Co-ordinator –MSc Analytical Chemistry
- c) Chemistry Club In-charge
- d) SCRIBE-Editorial committee

vii) Sr. R.Khandagale

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Hostel Dean
- c) Chemistry Club In-charge.
- d) FYBSc class In-charge.

IV] Contribution to Quality Assurance Diploma program:

Dr. Prabha Shetty

Conducted sessions on Spectroscopic methods: UV-Vis, IR, AAS, FES, Fluorimetry and phosphorimetry. [5 hrs online session]

VI Contribution to NSS activities:

- Organised webinar on 'E-mask: Protecting yourself online' organised by the Chemistry department in collaboration with NSS on 3rd June 2020.
- Organised webinar on 'First Aid to your rescue' by Mr Bhushan Harne organised by NSS Unit Sophia College on 17th June 2020-RF
- Organised webinar on 'Yoga: Finding calm in the chaos' organised by the NSS unit of Sophia College on the International Yoga Day 20th June 2020.-RF
- Organised webinar on 'Environment and You: The Journey Ahead' by Mr. Bhushan Kishor Harne -First Aid Trainer and Environmentalist and member of Green Hills Group- NGO, Pune- 4th July 2020-RF
- Organised webinar on 'Somewhere Over the Rainbow' a session on mental health by Dr Maithili Umate Associate Professor and Head of Unit, Dept. of psychiatry; Grant Govt Medical College and JJ Hospital, Mumbai- July 11, 2020-RF
- Organised webinar on 'Law and Rights of Women' by Ms. Preeti Gada Advocate of High Court, Mumbai -8th August 2020-RF
- Organised webinar on National level webinar on 'The Armed Forces - An Insight' by Colonel HS Grewal and Captain Suresh K-RF
- Organised webinar on 'Leadership and Team Building Webinar'- 12.09.2020 Shri J.F. Ribeiro in collaboration with PCGT- 21st Sept -RF
- Organised webinar on 'The Hangout – Promoting mental wellbeing and self care' by Mr Sam Koshy, (Director) and Mr. Preejo TJ (Learning Consultant) of The Movement- 26th September, 2020-RF
- Organised webinar on 'Fit India' by Mr. Manish Jaiswal - 05.12.2020-RF

VII Professional development:

- Five day faculty development program on 'Evolution from offline to online teaching' by Satish Pradhan Dnyanasadhana College from 30th May to 3rd June 2020-PS, RF, TA, LJ, RK.
- One week faculty development course 'Role of ICT in teaching learning process' organized by Shri Pancham Khemraj Mahavidyalaya, Sawantwadi from 5th to 10th June, 2020- TA
- Completed a one week FDP 'Advancing towards Sustainable Teaching, Learning and Evaluation Methods' organised by SFDC, Sydenham College, Mumbai & IQAC Somaiya College, Mumbai from under MHRD, UGC & PMMMNTT from 10th August to 14th August, 2020.-TA

- Enrolled for University of Mumbai- Garware Institute Of Career Education and Development course on Career Guidance and Career Mentoring and received certification for course completion on 2nd Sept,2020-RF,TA
- Four day- FDP ‘Interactive online teaching platforms’ 28th June to 2nd July 2020 (3 hrs each day) conducted by St. Xaviers College, Mumbai SM

VII] Staff research:

VIII] A. Research publications: nil

VIII B. Other publications: Educational resource

Dr. Prabha Shetty

Published illustration on the topic Principle of cation exchange chromatography and Comic strip on the topic introduction to errors on OER site (link attached above)

IX] Examination work

i) Dr I Mendes:

- Examiner for MSc Semester III (Group A) Online Practical Examination held in January 2021
- Examiner for TYBSc Sem V Paper 1 Physical Chemistry Practical examination held at Sophia College (Autonomous) in November 2020.
- Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I and V of Sophia College (Autonomous)
- Examiner, paper setter for Online exam of Sem VI Theory & ATKT Sem V Batch 2019-20 held in August/ September 2021
- Junior Supervisor for ATKT and SEE examination.

ii) Dr P Shetty:

- Examiner for MSc part II (Group B) Online Practical Examination held in January 2021
- Practical examiner for SYBSc and TYBSc Analytical Chemistry. This included paper setting, conducting practicals, taking viva voce (TY) and assessment.).
- Paper Setting and invigilation, assessment of SEE and IA papers of Sem VI (2019-2020 batch), ATKT Sem V (2019-2020 batch), SemIII and Sem IV ATKT exam of Sophia College (Autonomous)
- Paper Setting preparing model Answer key, invigilation and assessment of SEE and IA papers of SemIII and Sem V of current batch of Sophia College (Autonomous).

iii) Ms R Ferns:

- a. Examiner for TYBSc Sem V Paper 2 (3 Units) and Applied Component Practical examination held at Sophia College (Autonomous) in November 2020.
- b. Examiner for SYBSc Practical Examination held at Sophia College (Autonomous) in January ,2021.
- c. Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem III and V of Sophia College (Autonomous)
- d. Examiner,paper setter for Online exam of Sem VI Theory & ATKT Sem V Batch 2019-20 held in August/ September 2021
- e. Junior Supervisor for ATKT and SEE examination.

iv) Dr S Murthy:

- a. Examiner for TYBSc Sem V Organic Chemistry Practical examination held at Sophia College (Autonomous) in November 2020.
- b. Examiner for SYBSc Practical Examination held at Sophia College (Autonomous) in January ,2021.
- c. Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem III and V of Sophia College (Autonomous)
- d. Examiner,paper setter for Online exam of Sem VI Theory & ATKT Sem V Batch 2019-20 held in August/ September 2021
- e. Junior Supervisor for ATKT and SEE examination.

v) Ms T Asha:

- a. Examiner for MSc Sem III Paper 4 Practical Examination held at Sophia College (Autonomous) in November 2020
- b. Examiner for TYBSc Sem V Paper 1 -3 Units (Physical & Analytical Chemistry) Practical examination held at Sophia College (Autonomous) in November 2020.
- c. Examiner for FYBSc Practical Examination held at Sophia College (Autonomous) in January ,2021.
- d. Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I and V of Sophia College (Autonomous)
- e. Examiner,paper setter for Online exam of Sem 6 Theory & Atkt Sem5 Batch 2019-20 held in August/ September 2021
- f. Junior Supervisor for ATKT and SEE examination.

vi) Ms. L.Jeysus:

- a. Examiner for TYBSc Sem V Paper 2 (3 Units) and Applied Component Practical examination held at Sophia College (Autonomous) in November 2020.

- b. Examiner for SYBSc Practical Examination held at Sophia College (Autonomous) in January ,2021.
- c. Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I and V of Sophia College (Autonomous)
- d. Examiner, paper setter for Online exam of Sem VI Theory & ATKT SemV Batch 2019-20 held in August/ September 2021
- e. Junior Supervisor for ATKT and SEE examination.

vii) Sr. R.Khandagale:

- a. Examiner for TYBSc Sem V Inorganic Chemistry Practical examination held at Sophia College (Autonomous) in November 2020.
- b. Examiner for FYBSc Practical Examination held at Sophia College (Autonomous) in January ,2021.
- c. Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I and V of Sophia College (Autonomous)
- d. Examiner, paper setter for Online exam of Sem VI Theory & ATKT SemV Batch 2019-20 held in August/ September 2021
- e. Junior Supervisor for ATKT and SEE examination.

IX] Consultancy/Subject related work outside the college: Nil

X] Others:

- Conducted Interviews for the M.Sc Part I Admissions-Dr. I.A.Mendes, Dr.P.Shetty, Dr. R. Ferns and Ms. L.Jeysus.



Dr. I.A. Mendes
Associate Professor
Head, Department of Chemistry
Sophia College (Autonomous)
30/11/2020

DEPARTMENT OF CHEMISTRY
REPORT OF SECOND TERM 2020-21

Name of Staff:

Senior College:
Dr. I.Mendes, Head of Dept.
Dr. P.Shetty
Ms. R.Ferns
Dr. S.Murthy
Ms. T.Asha
Ms. L.Jeysus
Sr. R.Khandagale

Junior College:
Ms. B. Gonsalves
Ms. S.Rathod
Ms. B.Shaikh

A] TEACHING AND LEARNING:

I] Teaching Aids used: In order to make the study of chemistry simple and interesting, a variety of teaching aids are used by the staff. These include:

Ball and stick molecular models, solid state models, chemistry molecular model kit: Molecular models (made at home) give a 3-D view of the molecule and thus help students to visualize the molecule and understand the molecular structure better. These were used for topics like stereochemistry-LJ

Practical demonstrations: Conducted practical experiments in the laboratory for TYBSc students and shared via Zoom.-IM

Phase Rule – Chloroform-water-acetic acid system.

Activity Coefficient of silver ion using potentiometer.

Isoelectric point of glycine using pH meter.

iii. Use of PowerPoint presentations by staff:

PowerPoint presentations were prepared for all the topics -IM, PS, RF, SM, TA, LJ, RK

Interactive presentations using applications like mentimeter-PS, LJ

iv. Creative activities used for teaching chemistry:

Creating interactive concept map:

Applications of thermogravimetry using miro/ mindomo/lucid chart or any other suitable app.-PS.

Reactions of alkenes and alkanes using whimsical-LJ

Infographs on applications of UV, IR and NMR spectroscopy were assigned to students.

SM

Students were asked to do additional research on different types of fuels used in aviation, rockets and submarines for the SY class-RK

Taught students how to draw a graph using excel.-LJ

Interactive PDF from various sites-PS, RK,TA. RF

Informal test using quizizz, kahoot, nearpod, testmoz-PS, TA, LJ, RK.

Shared e-books and important links of reference material and videos.-PS, RK, RF,SM,TA

Flipped classroom: videos and PDF were sent before the classroom and then the topic was discussed in the class.-PS, SM

Peer teaching, students presented assigned topics on carbohydrates, proteins, nucleic acids during the lectures and had a discussion after.-LJ

TYBSc students Drugs and Dyes: SM

Drug Delivery and Development

Drug metabolism

All classes of Chemotherapeutic agents

Organised seminars and presentations by:-IM

TYBSc students on the following topics:

Electron Spin Resonance Spectroscopy

Laser Spectroscopy

Hydrogen as a fuel of the future

SYBSc students on the following topics:

Applications of Nanoparticles as Catalysts

v. Other teaching strategies

Worksheets were provided to students on topics like:

Numerical problems for the topics- precipitation, redox titration, HETP and number of theoretical plates was given for practice. PS

Worksheets based on simulations for chromatography and Beer Lambert's law-PS

Numericals based on Quantum mechanics and Polymers for TY class-RK

Epimers and interconversions of Fischer and Haworth projections of monosaccharides for TY class.-LJ

Reactions of alkenes for FY class and chemical calculations for SY class.-LJ

Numericals on polarography and group 17 and 18 elements for TY and Molecular spectroscopy for FY classes-TA

All the topics were taught using the Doceri app. Online board.

Spectroscopy problems based on UV, IR, NMR and Mass have been given

Solutions to the problems were sent later on.

II] Teaching learning in the laboratory (Virtual Practicals) :

Since we are using the online mode for teaching, the practical syllabus was covered using the following:

Simulations or you tube videos were used to demonstrate practicals for all the classes.- IM, PS, SM, RF,TA, RK, LJ

Real lab procedures and readings were shared for all the experiments. The students then did calculations using this data and uploaded PDF on G-classroom.- IM, PS, RF, SM, TA,LJ, RK

For vitamin C and phosphoric acid in cola, an experiment-graph plotter (applet) was used to give them an idea about the effect of different parameters on the nature of the curve for TYBSc class. -PS

Interactive worksheet based on the experiment were shared for alloy analysis, estimation of aniline, estimation of dyes. -PS, LJ

For statistical treatment of data, students generated data at home by using household material and then applied t-test and Q test. -PS

For Daniel cell experiment, students used simulation to generate data which was then used for calculation. -PS

Used chemdraw to familiarise students with apparatus and enable them to assemble apparatus for distillation. -LJ

Students were also assigned into breakout rooms to interact and solve a quiz, worksheet based on the experiment for analysis of the hardness of water, preparation of drugs. -LJ

Pre-lab and post-lab assignments which included quizzes, worksheets, etc. -PS, TA, RK

III] Teaching chemistry- Beyond the classroom: In working towards the College mission of providing holistic growth to students, the chemistry department organises a variety of activities for the students. These activities aim at exposing students to frontier areas of chemistry beyond the syllabus.

i) Invited lectures:

Webinar on 'Fascinating World of Carbon Nanoparticles' by Dr Kinshuk Dasgupta organised by Department of Chemistry in collaboration with IWSA on 23rd January 2021

Nobel oration lecture Genetic Scissors: Rewriting the Code of life' by Dr. Debojyoti Chakraborty organised by the Chemistry department on 13th February 2021.

Webinar series on 'Plasma & its Application & Nuclear Fusion' organised by Chemistry Department in collaboration with Indian Institute of Plasma Research on 10th March 2021.

ii) Literature surveys/ research work under EXSP program-

a) Literature surveys:

Guided Ms. Iqra Patel of SYBSc in her literature survey on Biodegradable Polymers. -RK.

Guided the following MSc Students for Literature survey:

o Ms Crissan Miranda & Ms Alicia Dsouza -PS

o Mr Kevin Vaz & Ms Fleme Rodrigues -RF

o Ms Afreen Khan & Ms Sanskriti Almeida-SM

o Ms Bushra Shaikh & Ms Naziya Baig-TA

o Ms. Alisha Gonsalves-LJ

Ms. Kalyani Jadhav-RK

b) Presentation component:

Guided Ms. Mariyah Khatri and Ms. Sharmin Kika on EXSP presentation 'COVID and its treatment' which was presented on 4th January, 2020. -IM

Guided Ms. Iqra Patel for EXSP presentation component on 'Smart Polymers' which was presented on 4th January, 2020-LJ

c) Research projects:

Guided Priya Naik, for EXSP Research Component "Water as green solvent in reactions involving non-polar organic compounds." - SM

iii) Chemistry Club: Sr. R.Khandagale and Ms. L.Jeysus are the co-coordinators of the club for 2019-20. Activities organized in the College:

Chemistry quiz 'Genius' for the FYBSc students on 12th February 2021.

'Unleash you' a singing and dance competition for the students of science stream, on 26th February 2021.

Online Inter College competition Chemscope 2021 - 4 different events were held. Students from 15 colleges participated and a total of 73 entries were received over four events namely Chem Meme, Chemistry Laboratory comes home, A beaker full of thoughts, College After Covid-19

Students were encouraged to participate in inter college competitions. Several of our students participated and even won at several competitions.

React 2021, organized by Ruia College on 26th February, 2021 - Shazia Sayyed (TYBSc), 1st Prize, Market Melodies.

Online National Level Science Quiz by Maharashtra College on National Science Day Celebrations on 28th February, 2021 – Sarah Shaikh (FYBSc), Areeba Khan (FYBSc), Romana Shaikh (SYBSc), Samiksha Addagatla (TYBSc) qualified.

Rasashastra – intercollegiate competition by SIWS College held on 12th February 2021 – Ayesha Qureshi (FYBSc), 3rd prize, Chem-E-Poster competition; Shweta Rai Sharma (FYBSc), 3rd Prize, Chem-Crossword; Shaziya Sayyed and Safina Qureshi (TYBSc), 1st Prize, Chemo-Ad.

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iv) Field trips: Nil

IV] Other activities organized by the Department:

i) Creating awareness: Nil

ii) Student development activities: Encouraged students to participate in an online course by IPWI 2021, an international special online one credit course for students and educators on the theme of 'Forests, Food and Future' - Total 57 students have registered for this course - RK (course co-ordinator)

iii) Student follow up through contact group: Students studying chemistry are assigned a contact teacher who follows up their academic progress/ problems through the year. For the SY level the practical teacher is the contact teacher.

iv) Staff –student fun activities:

'Unleash you' a singing and dance competition for the students of science stream, organised by Chem Club on 26th February 2021.-LJ, RK

Played an interactive online game on the elements of the periodic table with the SYBSc students.-LJ

v) Others:Nil

B] STAFF ACTIVITIES:

I] Workshops, seminars, conferences, talks attended/organised in the college:

Organised and attended the following:

o Webinar on 'Fascinating world of carbon nanomaterials' in collaboration with IWSA under DBT star status by Dr Kinshuk Dasgupta ,Sr scientist BARC, Mumbai on 23rd Jan,2021-IM,PS,RF,SM,TA,LJ,RK

o Nobel Oration on 'Genetic scissors- rewriting the code of life' by Dr Debojyoti Chakraborty, CSIR on 13th Feb,2021.- IM,PS,RF,SM,TA,LJ,RK

o One day workshop on 'Plasma and its applications and nuclear fusion' in collaboration with IPR, Ahmedabad on 13th March 202.- IM,PS,RF,SM,LJ,RK
6th Chemistry Board of Studies Meeting via Zoom on 10th April, 2021.-IM,PS,RF,SM,LJ,RK

Attended IQAC activities organised by the College

Looking Ahead:NAAC 2023 by Dr Usha Mukundan on 29th January,2021- IM,PS,RF,SM,TA,LJ,RK

Autonomy -The path ahead - Conference from 16th -18th February,2021.- IM,PS,RF,SM,TA,LJ,RK.

Blooms Taxonomy for constructing MCQs by Dr V. Sebastian on 10th April 2021.- IM,PS,RF,SM,TA,LJ,RK

Learning outcomes for MCQs and developing Assessment Rubrics by Dr A Coutinho & Dr I John on 16h April 2021.- IM,PS,RF,SM,TA,LJ,RK

Attended the XI Quest- Wider than the sky on 27th Feb,2021 which included talk on 'Academic research and job opportunities in oceanography' by Dr Aboobacker V.M Research assistant professor, Qatar University and Dr G George SAARC (SAC),Dhaka followed by Poster presentation by students.-TA

Attended webinar on 'Chasing hope through Stem cells' by Dr C Vishwannathan organized by Life science department in collaboration with IWSA and BRNS-DAE on 1st March 2021'-TA

Co-ordinator for the 30 hours certificate course on 'Entrepreneurship skills' sponsored by RUSA.-1st March to 21st March 2021.-RF

Department meeting via zoom on 27th January 2021, 6th March 2021 and 5th April 2021.- IM,PS,RF,SM,TA,LJ RK

Organised a Research Component presentation for EXSP on 27th May 2021 by an external judge Dr. Madhuri Hambarde from St. Xavier's.

Conducted an orientation session to FY B.Sc on EXSP programme on 24th May 2021
Star Status: SM

The data given by all the departments have been compiled and sent to DBT for getting the Star Status grant sanctioned. Resolved the queries raised by DBT on the documents sent, for getting the grant sanctioned.

II Workshops, seminars, conferences, talks attended outside the college:

'Ultrafast chemistry of the ultrasmall' by Prof. Anindya Datta ,Head-Dept of Chemistry, IIT Mumbai on 27th February,2021 organised by XAC, St Xaviers college, Mumbai -TA

One day National webinar on 'IPR & research opportunities' organised by Siddharth college of Arts, Science & Commerce , Mumbai on 18th April,2021-TA

Attended Webinar on "E-content development & Research methodology" organized by A E Kalsekar college ,Thane with IQAC cluster, India on 17th May 2021- TA

Attended Webinar on 'Food waste management in Modern Era' organized by Nagrik Shikshan Sanstha College, Mumbai on 22nd May 2021-TA

III] Contribution to Department and College administration/activities:

Dr I Mendes:

- a) Head of Department.
 - b) Chairman, BOS-Chemistry Sophia College (Autonomous)
- ii) Dr P Shetty
- a) Member of BOS-Chemistry Sophia College (Autonomous)
 - b) Science stores In-charge
 - c) M.Sc Part II class In-charge
 - d) Member of Academic audit committee
 - e) RUSA research committee member
 - f) MSc exam committee member
 - g) IQAC-CAS sub-committee member
 - i) LMS Technical Committee member for deciding the best LMS for College.
 - j) In charge for keeping Alumni record
- iii) Ms. R Ferns
- a) Member of BOS-Chemistry Sophia College (Autonomous)
 - b) S.Y.B.Sc. class In-charge.
 - c) NSS Program Officer.
- iv) Dr S Murthy:
- a) Co-ordinator- for the College (Star Status)
 - b) Member of BOS-Chemistry Sophia College (Autonomous)
 - c) Co-ordinator, EXSP program
 - d) Co-ordinator, Time Table Committee
 - e) Member, Admission Committee
 - f) M.Sc Part-I In-charge
- v) Ms. T Asha:
- a) Member of BOS-Chemistry Sophia College (Autonomous)
 - b) Member, Sigma Club
 - c) Member, Exam Committee
 - d) Member, Magazine Committee
 - e) T.Y.B.Sc. Class In-charge
 - f) Co-ordinator, IQAC sub- committee for workshops
 - g) Member, Nature Club
 - h) Teacher -in charge TYBSc
- vi) Ms L.Jeysus
- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
 - b) Co-ordinator –MSc Analytical Chemistry
 - c) Joint co-ordinator of Sophia and Jai Hind College MSc Part I programme

- d) Chemistry Club In-charge
- e) SCRIBE-Editorial committee.

vii) Sr. R.Khandagale

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Hostel Dean
- c) Chemistry Club In-charge.
- d) FYBSc class In-charge.

IV] Contribution to Quality Assurance Diploma program: Nil

V] Contribution to NSS activities:

Co-ordinator for the 30 hours certificate course on 'Entrepreneurship skills' sponsored by RUSA.-1st March to 21st March 2021.-RF

Resource person for chocolate making workshop organised by NSS unit the college under RUSA sponsored Certificate course on entrepreneurship skills.-PS

VI] Professional development:

Two day FDP on 'Teaching Learning strategies for outcome based education' organised by BTTC from 25th to 26th February 2021.-LJ

Participant & worked on the organizing committee for the National level FDP on RBPT in collaboration with IISER-CoSME from 24th May-29th May,2021-TA

Participant for the National level FDP on RBPT in collaboration with IISER-CoSME from 24th May-29th May,2021-RF, LJ

Attended a Refresher Course in Chemistry conducted by Human Resource Development Center 'University of Hyderabad' from 8th February to 20th February. Secured A grade in the course. SM

VII] Staff research:

Dr. P Shetty

Awarded following projects under RUSA (2020-2022)

A research project entitled "Isolation of anthraquinones from Aloe vera and its modification into semi-synthetic dyes for application in food and textiles industries" allotted 5 lakhs 5 thousand rupees collaboration with ICT, Mumbai.

An outreach project entitled "To study and verify that students learn and retain conceptual science by 'Doing' it. In collaboration with Concepts Unlimited, Mumbai allotted 5 lakh rupees.

VIII] A. Research publications: EXSP

Hannah Ansari, Yashaswini Choudhary and Prabha Shetty, Comparative antioxidant potential of two drought resistant medicinal plants of Rajasthan- Prosopis cineraria and Capparis decidua has been accepted for publication in an International journal VEGETOS which is UGC recognised and scopus indexed journal. Published online on February 1, 2021. Impact Factor 10 by MIAR and 5.0 by NAAS

VIII B. Other publications: (Student Publications) Educational resource

Students published (Total 14) interactive illustrations, videos and concept maps on the topic- Applications of thermogravimetry and Sampling” on OER commons.-PS (Google sheet link for the same is given below)

<https://drive.google.com/file/d/1EB9X-k3BWOds-Mf6K76nacgWafVlh43Q/view?usp=s>
haring

Shaziya Sayyed’s OER for applications of UV spectroscopy was published under the guidance of Dr. P.Sirisha Murthy

IX] Examination work

i)Dr I Mendes:

- a) Examiner for Sem VI Physical Chemistry Practical examination.
- b) Examiner for MSc Sem I Paper I Practical Examination in March.
- c) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I, III and VI and MSc-I Paper I.
- d) Junior Supervisor for ATKTK and SEE examination.

ii) Dr P Shetty:

- a) Examiner for MSc part I – Analytical Chemistry, Online Practical Examination held on 31st March 2021.
- b) Paper setting for IA, SEE and practicals for TYBSc, SYBSc, MSc Part 1.
- c) Conducted Practical exam of TYBSc and SYBSc online.
- d) Paper Setting and invigilation of SYBSc ATKTK Sem III (P3), MSc Part 1 ATKTK

(P4)

iii) Ms R Ferns:

- a) Examiner for TYBSc Sem VI Paper 2 (3Units) Chemistry and Applied Component Practical examination on 19th and 22nd April,2021.
- b) Examiner for MSc Sem IV (Group B) Practical Examination on 27th April 2021.
- c) Examiner for SYBSc Practical Examination.
- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem III and VI and MSc-I Paper II.
- e) Junior Supervisor for ATKTK and SEE examination.

iv) Dr S Murthy:

- a) Examiner for Sem VI Organic Chemistry Practical examination
- b) Examiner for MSc Sem I Paper III Practical Examination in March 2021.
- c) Examiner for SYBSc Practical Examination held.
- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem III and VI and MSc-I Paper III.
- e) Junior Supervisor for ATKTK and SEE examination.

v) Ms T Asha:

- a) Examiner for TYBSc Sem VI Paper 1 (3Units) Physical-Analytical Chemistry Practical examination on 20th April,2021.
- b) Examiner for MSc Sem I Paper 2 Practical Examination in March 2021.
- c) Examiner for FYBSc Practical Examination on 21st & 22nd May,2021.

- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem II and VI.
- e) Junior Supervisor for ATKT and SEE examination.
- f) MSc IA Sem IV Paper IV in March 2021
- vi) Ms. L.Jesus
 - a) Examiner for TYBSc Sem VI Paper 2 (3Units) Chemistry and Applied Component Practical examination on 19th and 22nd April,2021.
 - b) Examiner for MSc Sem IV (group C) Practical Examination on 28th April 2021.
 - c) Examiner for SYBSc Practical Examination.
 - d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I and VI and MSc-I Paper III.
 - e) Junior Supervisor for ATKT and SEE examination.
 - f) MSc Semester IV Paper III Internal Assessment.
- vii) Sr. R.Khandagale:
 - a) Examiner for Sem VI Inorganic Chemistry Practical examination.
 - b) Examiner for MSc Sem IV (group A) Practical Examination on 26th April 2021.
 - c) Examiner for FYBSc Practical Examination.
 - d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I, III and VI and MSc-I Paper I.
 - e) Junior Supervisor for ATKT and SEE examination.

IX] Consultancy/Subject related work outside the college:

- Conducted lectures for MSc Part 1 students of Thakur College, Kandivali, on the topic Calculations based on chemical principles (Paper 4, Unit 2)-PS
- Appointed as Vice Chancellor's Nominee- Subject Expert for Screening and Evaluation Committee for CAS held at- IM
- SIES College of Arts, Science and Commerce on 20th February, 2021
- Jhunjhunwala College on 5th March, 2021
- Maharashtra College on 16th March, 2021
- Chairperson, 'World Chemistry Conference 2021' held on 3rd May 2021 organised by Wilson College in association with the University of Mumbai and Association of Chemistry Teachers.-IM
- Evaluated action research projects (online) for Dr. Homi Bhabha Balvaidnyanik competition -2020-2021 held on 23rd May 2021-PS
- Conducted - One hour session of meditation for 3 days from 10th to 12th March 2021 for the high school students of Sacred Heart School in Poland.-RK

X] Instruments acquired by the department:

CAMAG, HPTLC equipment under RUSA project (cost ₹. 10,30,000/-)

XI] Others:

- Conducted lectures for MSc Part 1 students on the topic Electrochemistry-IM
- Calculations based on chemical principles (Paper 2 Unit 2) and Thermal methods (Paper 4, Unit 4)-PS
- Stereochemistry and Oxidation reactions-SM

Symmetry and hybridisation-RF
Oxidation Reactions-LJ
Chemical Kinetics-RK
Conducted lecture for the M.Sc Part II students on the topic:
Spectro-electrochemistry-PS
Mossbauer Spectroscopy-TA
Staff in-charge for 'Chemistry Lab comes home' round for the intercollegiate chem club activity.-PS
MSc Part I discussion of new topics to be introduced in the syllabus
Paper I-IM, RK
Paper II-RF, TA
Paper III- SM, LJ
Paper IV-PS



Dr. I.A. Mendes
Associate Professor
Head, Department of Chemistry
Sophia College (Autonomous)
30/04/2021

**DEPARTMENT OF CHEMISTRY
REPORT OF SECOND TERM 2020-21**

Name of Staff:

Senior College:

1. Dr. I.Mendes, Head of Dept.
2. Dr. P.Shetty
3. Ms. R.Ferns
4. Dr. S.Murthy
5. Ms. T.Asha
6. Ms. L.Jeysus
7. Sr. R.Khandagale

Junior College:

1. Ms. B. Gonsalves
2. Ms. S.Rathod
3. Ms. B.Shaikh

A) TEACHING AND LEARNING:

I) Teaching Aids used: In order to make the study of chemistry simple and interesting, a variety of teaching aids are used by the staff. These include:

- i. **Ball and stick molecular models, solid state models, chemistry molecular model kit:** Molecular models (made at home) give a 3-D view of the molecule and thus help students to visualize the molecule and understand the molecular structure better. These were used for topics like stereochemistry-LJ
- ii. **Practical demonstrations:** Conducted practical experiments in the laboratory for TYBSc students and shared via Zoom.-IM
 - Phase Rule – Chloroform-water-acetic acid system.
 - Activity Coefficient of silver ion using potentiometer.
 - Isoelectric point of glycine using pH meter.
- iii. **Use of PowerPoint presentations by staff:**
 - PowerPoint presentations were prepared for all the topics -IM, PS, RF, SM, TA, LJ, RK
 - Interactive presentations using applications like mentimeter-PS, LJ
- iv. **Creative activities used for teaching chemistry:**
 - Creating interactive concept map:
 - Applications of thermogravimetry using miro/ mindomo/lucid chart or any other suitable app.-PS.
 - Reactions of alkenes and alkanes using whimsical-LJ
 - Infographs on applications of UV, IR and NMR spectroscopy were assigned to students. SM
 - Students were asked to do additional research on different types of fuels used in aviation, rockets and submarines for the SY class-RK
 - Taught students how to draw a graph using excel.-LJ
 - Interactive PDF from various sites-PS, RK,TA. RF
 - Informal test using quizizz, kahoot, nearpod, testmoz-PS, TA, LJ, RK.
 - Shared e-books and important links of reference material and videos.-PS, RK, RF,SM,TA
 - Flipped classroom: videos and PDF were sent before the classroom and then the topic was discussed in the class.-PS, SM
 - Peer teaching, students presented assigned topics on carbohydrates, proteins, nucleic acids during the lectures and had a discussion after.-LJ
 - TYBSc students Drugs and Dyes: SM
 - Drug Delivery and Development
 - Drug metabolism
 - All classes of Chemotherapeutic agents

- Organised seminars and presentations by:-IM

TYBSc students on the following topics:

- Electron Spin Resonance Spectroscopy
- Laser Spectroscopy
- Hydrogen as a fuel of the future

SYBSc students on the following topics:

- Applications of Nanoparticles as Catalysts

v. Other teaching strategies

Worksheets were provided to students on topics like:

- Numerical problems for the topics- precipitation, redox titration, HETP and number of theoretical plates was given for practice. PS
- Worksheets based on simulations for chromatography and Beer Lambert's law-PS
- Numericals based on Quantum mechanics and Polymers for TY class-RK
- Epimers and interconversions of Fischer and Haworth projections of monosaccharides for TY class.-LJ
- Reactions of alkenes for FY class and chemical calculations for SY class.-LJ
- Numericals on polarography and group 17 and 18 elements for TY and Molecular spectroscopy for FY classes-TA
- All the topics were taught using the Doceri app. Online board.
- Spectroscopy problems based on UV, IR, NMR and Mass have been given
Solutions to the problems were sent later on.

II] Teaching learning in the laboratory (Virtual Practicals) :

Since we are using the online mode for teaching, the practical syllabus was covered using the following:

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- Interactive worksheet based on the experiment were shared for alloy analysis, estimation of aniline,estimation of dyes.-PS,LJ
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- Used chemdraw to familiarise students with apparatus and enable them to assemble apparatus for distillation. -LJ
- Students were also assigned into breakout rooms to interact and solve a quiz, worksheet based on the experiment for analysis of the hardness of water, preparation of drugs. -LJ
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- Guided Ms.Mariyah Khatri and Ms.Sharmin Kika on EXSP presentation ‘COVID and its treatment’ which was presented on 4th January, 2020.-IM
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- The data given by all the departments have been compiled and sent to DBT for getting the Star Status grant sanctioned. Resolved the queries raised by DBT on the documents sent, for getting the grant sanctioned.

II Workshops, seminars, conferences, talks attended outside the college:

- 'Ultrafast chemistry of the ultrasmall' by Prof. Anindya Datta ,Head-Dept of Chemistry, IIT Mumbai on 27th February,2021 organised by XAC, St Xaviers college, Mumbai -TA
- One day National webinar on 'IPR & research opportunities' organised by Siddharth college of Arts, Science & Commerce , Mumbai on 18th April,2021-TA
- Attended Webinar on "E-content development & Research methodology" organized by A E Kalsekar college ,Thane with IQAC cluster, India on 17th May 2021- TA
- Attended Webinar on 'Food waste management in Modern Era' organized by Nagrik Shikshan Sanstha College, Mumbai on 22nd May 2021-TA

III] Contribution to Department and College administration/activities:

i) Dr I Mendes:

- a) Head of Department.
- b) Chairman, BOS-Chemistry Sophia College (Autonomous)

ii) Dr P Shetty

- a) Member of BOS-Chemistry Sophia College (Autonomous)
- b) Science stores In-charge
- c) M.Sc Part II class In-charge
- d) Member of Academic audit committee
- e) RUSA research committee member
- f) MSc exam committee member
- g) IQAC-CAS sub-committee member
- i) LMS Technical Committee member for deciding the best LMS for College.
- j) In charge for keeping Alumni record

iii) Ms. R Ferns

- a) Member of BOS-Chemistry Sophia College (Autonomous)
- b) S.Y.B.Sc. class In-charge.
- c) NSS Program Officer.

iv) Dr S Murthy:

- a) Co-ordinator- for the College (Star Status)
- b) Member of BOS-Chemistry Sophia College (Autonomous)
- c) Co-ordinator, EXSP program
- d) Co-ordinator, Time Table Committee
- e) Member, Admission Committee
- f) M.Sc Part-I In-charge

v) Ms. T Asha:

- a) Member of BOS-Chemistry Sophia College (Autonomous)
- b) Member, Sigma Club
- c) Member, Exam Committee
- d) Member, Magazine Committee
- e) T.Y.B.Sc. Class In-charge
- f) Co-ordinator, IQAC sub- committee for workshops
- g) Member, Nature Club
- h) Teacher -in charge TYBSc

vi) Ms L.Jeysus

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Co-ordinator –MSc Analytical Chemistry
- c) Joint co-ordinator of Sophia and Jai Hind College MSc Part I programme
- d) Chemistry Club In-charge
- e) SCRIBE-Editorial committee.

vii) Sr. R.Khandagale

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Hostel Dean
- c) Chemistry Club In-charge.
- d) FYBSc class In-charge.

IV] Contribution to Quality Assurance Diploma program:Nil

VI] Contribution to NSS activities:

- Co-ordinator for the 30 hours certificate course on ‘Entrepreneurship skills’ sponsored by RUSA.-1st March to 21st March 2021.-RF
- Resource person for chocolate making workshop organised by NSS unit the college under RUSA sponsored Certificate course on entrepreneurship skills.-PS

VI] Professional development:

- Two day FDP on ‘Teaching Learning strategies for outcome based education’ organised by BTTC from 25th to 26th February 2021.-LJ

- Participant & worked on the organizing committee for the National level FDP on RBPT in collaboration with IISER-CoSME from 24th May-29th May,2021-TA
- Participant for the National level FDP on RBPT in collaboration with IISER-CoSME from 24th May-29th May,2021-RF, LJ
- Attended a Refresher Course in Chemistry conducted by Human Resource Development Center ‘University of Hyderabad’ from 8th February to 20th February. Secured A grade in the course. SM

VII] Staff research:
Dr. P Shetty

Awarded following projects under RUSA (2020-2022)

- A research project entitled “Isolation of anthraquinones from *Aloe vera* and it’s modification into semi-synthetic dyes for application in food and textiles industries” allotted 5 lakhs 5 thousand rupees collaboration with ICT, Mumbai.
- An outreach project entitled “To study and verify that students learn and retain conceptual science by ‘Doing’ it. In collaboration with Concepts Unlimited, Mumbai allotted 5 lakh rupees.

VIII] A. Research publications: EXSP

Hamnah Ansari, Yashaswini Choudhary and Prabha Shetty, Comparative antioxidant potential of two drought resistant medicinal plants of Rajasthan- *Prosopis cineraria* and *Capparis decidua* has been accepted for publication in an International journal VEGETOS which is UGC recognised and scopus indexed journal. Published online on February 1, 2021. Impact Factor 10 by MIAR and 5.0 by NAAS

VIII B. Other publications: (Student Publications) Educational resource

Students published (Total 14) interactive illustrations, videos and concept maps on the topic- Applications of thermogravimetry and Sampling” on OER commons.-PS (Google sheet link for the same is given below)

<https://drive.google.com/file/d/1EB9X-k3BWODs-Mf6K76nacgWafVlh43Q/view?usp=sharing>

Shaziya Sayyed’s OER for applications of UV spectroscopy was published under the guidance of Dr. P.Sirisha Murthy

IX] Examination work

i) Dr I Mendes:

- a) Examiner for Sem VI Physical Chemistry Practical examination.
- b) Examiner for MSc Sem I Paper I Practical Examination in March.
- c) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I, III and VI and MSc-I Paper I.
- d) Junior Supervisor for ATKKT and SEE examination.

ii) Dr P Shetty:

- a) Examiner for MSc part I – Analytical Chemistry, Online Practical Examination held on 31st March 2021.
- b) Paper setting for IA, SEE and practicals for TYBSc, SYBSc, MSc Part 1.
- c) Conducted Practical exam of TYBSc and SYBSc online.
- d) Paper Setting and invigilation of SYBSc ATKKT Sem III (P3), MSc Part 1 ATKKT (P4)

iii) Ms R Ferns:

- a) Examiner for TYBSc Sem VI Paper 2 (3Units) Chemistry and Applied Component Practical examination on 19th and 22nd April, 2021.
- b) Examiner for MSc Sem IV (Group B) Practical Examination on 27th April 2021.
- c) Examiner for SYBSc Practical Examination.
- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem III and VI and MSc-I Paper II.
- e) Junior Supervisor for ATKKT and SEE examination.

iv) Dr S Murthy:

- a) Examiner for Sem VI Organic Chemistry Practical examination
- b) Examiner for MSc Sem I Paper III Practical Examination in March 2021.
- c) Examiner for SYBSc Practical Examination held.
- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem III and VI and MSc-I Paper III.
- e) Junior Supervisor for ATKKT and SEE examination.

v) Ms T Asha:

- a) Examiner for TYBSc Sem VI Paper 1 (3Units) Physical-Analytical Chemistry Practical examination on 20th April, 2021.
- b) Examiner for MSc Sem I Paper 2 Practical Examination in March 2021.
- c) Examiner for FYBSc Practical Examination on 21st & 22nd May, 2021.
- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem II and VI.
- e) Junior Supervisor for ATKKT and SEE examination.

f) MSc IA Sem IV Paper IV in March 2021

vi) Ms. L.Jeysus

- a) Examiner for TYBSc Sem VI Paper 2 (3Units) Chemistry and Applied Component Practical examination on 19th and 22nd April,2021.
- b) Examiner for MSc Sem IV (group C) Practical Examination on 28th April 2021.
- c) Examiner for SYBSc Practical Examination.
- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I and VI and MSc-I Paper III.
- e) Junior Supervisor for ATKT and SEE examination.
- f) MSc Semester IV Paper III Internal Assessment.

vii) Sr. R.Khandagale:

- a) Examiner for Sem VI Inorganic Chemistry Practical examination.
- b) Examiner for MSc Sem IV (group A) Practical Examination on 26th April 2021.
- c) Examiner for FYBSc Practical Examination.
- d) Paper Setting, preparing model Answer key, invigilation, assessment of SEE and IA papers of Sem I, III and VI and MSc-I Paper I.
- e) Junior Supervisor for ATKT and SEE examination.

IX] Consultancy/Subject related work outside the college:

- Conducted lectures for MSc Part 1 students of Thakur College, Kandivali, on the topic Calculations based on chemical principles (Paper 4, Unit 2)-PS
- Appointed as Vice Chancellor's Nominee- Subject Expert for Screening and Evaluation Committee for CAS held at- IM
 - SIES College of Arts, Science and Commerce on 20th February, 2021
 - Jhunjhunwala College on 5th March, 2021
 - Maharashtra College on 16th March, 2021
- Chairperson, 'World Chemistry Conference 2021' held on 3rd May 2021 organised by Wilson College in association with the University of Mumbai and Association of Chemistry Teachers.-IM
- Evaluated action research projects (online) for Dr. Homi Bhabha Balvaidnyanik competition -2020-2021 held on 23rd May 2021-PS
- Conducted - One hour session of meditation for 3 days from 10th to 12th March 2021 for the high school students of Sacred Heart School in Poland.-RK

XI] Instruments acquired by the department:

CAMAG, HPTLC equipment under RUSA project (cost ₹. 10,30,000/-)

XII] Others:

- Conducted lectures for MSc Part 1 students on the topic
 - Electrochemistry-IM
 - Calculations based on chemical principles (Paper 2 Unit 2) and Thermal methods (Paper 4, Unit 4)-PS
 - Stereochemistry and Oxidation reactions-SM
 - Symmetry and hybridisation-RF
 - Oxidation Reactions-LJ
 - Chemical Kinetics-RK
- Conducted lecture for the M.Sc Part II students on the topic:
 - Spectro-electrochemistry-PS
 - Mossbauer Spectroscopy-TA
- Staff in-charge for ‘Chemistry Lab comes home’ round for the intercollegiate chem club activity.-PS
- MSc Part I discussion of new topics to be introduced in the syllabus
 - Paper I-IM, RK
 - Paper II-RF, TA
 - Paper III- SM, LJ
 - Paper IV-PS



Dr. I.A. Mendes
Associate Professor
Head, Department of Chemistry
Sophia College (Autonomous)
30/04/2021