DEPARTMENT OF CHEMISTRY REPORT OF FIRST TERM 2021-22

Name of Staff:

Senior College:

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

Junior College:

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

A] TEACHING AND LEARNING:

I] <u>Teaching Aids used:</u> 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:
 - -Hybridization-LJ,

-Students were assigned to make models to help understand the stereochemistry of the molecules-SM

-Molecular symmetry-RF,

-Sample thief working model -PS

-TYBSc students made models using clay and wheat flour to understand the different types of packing and layering in solids.- TA

ii. Practical demonstrations:

SYBSc students were trained to prepare turmeric paper and test the alkalinity of various substances at home -RF

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,AQ, and AM Interactive PPTs were also used-PS

iv. Creative activities used for teaching chemistry:

- Relevant videos on various topics were shown during lectures.IM, PS, SM, RF, TA, RK, LJ,AQ and AM.
- Applications like pubchem, chemtube were used to show the 3D structures of molecules for better understanding-SM, LJ and RK
- Assigned Jamboard activities -PS, LJ
- Applications like chemdraw were used to teach some topics-LJ
- <u>Creating illustration/ infograph/ timelines of discoveries using suitable app:</u> -Principle of cation exchange chromatography illustration was explained and the students were asked to create an illustration depicting Principle of anion exchange chromatography, classification of chromatographic methods and applications of IEC-PS,

-Applications of Zeta potential - RK

-Creating videos on various topics of Environmental Chemistry like -Air pollution, Bhopal gas tragedy, Minamata disease, soil pollution, Chernobyl disaster and heavy metal pollution.-PS

-Assignments on molecular symmetry, dyes, lanthanides and actinides to help students correlate what they learn to everyday life.-RF

-Natural and synthetic dyes-LJ

-Creation of a flow chart/brainstorming exercise using 'Miro' application-PS, SM, LJ, RK and AQ.

-Students of SYBSc class were assigned to make pictographs of the reactions learnt to an industrial application- SM

-Catalysts and Reagents, Infographics on TQM, GLP - SM

- Demonstrated how to prepare graphs using excel.-LJ and AQ
- Demonstrated how to use % composition calculator, concentration calculator app, molecular generator.-PS
- Simulations were used to explain 'Rotational and Vibrational spectroscopy' and some topics on pollution-PS and RK.
- Flipped classroom: videos and PDF were sent before the classroom and then the topic was discussed in the class.-PS, LJ,TA and RK
- Use of comic strip for brainstorming-PS
- Shared Infograph for revision, Interactive PDF from various sites shared e-books and important links of reference material and videos, interactive illustrations, video recording of lectures (powerpoint screen recorder and Screencast O'Matic)-PS, RK
- Explained various mechanisms to SY B.Sc students with the help of alchemie- a game application which helped predicting the movement of electrons in the mechanism-SM
- Used Doceri application to teach through blackboard and zoom whiteboard for students to interact-SM
- Used Chem-Libre text document -SM

• As we were using an online medium of teaching, a number of quizzes were conducted before/during/ after the lecture/practical to check the understanding of the various concepts taught in the lecture/practical. The following applications were used for administering the quizzes: Google forms, nearpod, wordsearch, kahoot, testmoz, wordmint, PPT, crossword labs, quizizz.-PS, SM, LJ, TA and RK.

v. Other teaching strategies

Worksheets were provided to students on topics like:

- Atomic spectroscopy, superconductivity, from sites like sanfoundry.com, scholarexpress.com etc -TA
- Construction of molecular orbitals, formal charge and Lewis dot structures for TYBSc class and IUPAC, hybridization for FYBSc class.-LJ
- Numericals on non-directional bonding for SYBSc class- RF
- 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, significant figures for SYBSc class-PS
- Numerical worksheet was given for practicing numericals to TYBSc and SYBSc students RK

II] <u>Teaching learning in the laboratory (Virtual Practicals) :</u>

- Used various simulations and videos for demonstration of practicals -IM, PS, SM, RF, LJ, RK, AQ, AM.
 Students used readings generated by the simulation(instrumental experiments) and performed calculations.-PS, RK.
- Made simulations for SMQA for the SYBSc class-LJ
- Made simulations for Organic Separation for the TYBSc class-SM, LJ
- Interactive quiz, videos using Nearpod SM LJ
- Use of Miro app for interactive and group learning for organic separation SM LJ
- Pre-lab and post-lab assignments-PS, LJ, RK
- Interactive worksheets were prepared -PS.
- Experiment applets were shared to study the effect of concentration and volume of the titrant and titrand on the nature of the graph.-PS
- Video recording of the experiment done by Sr. Rajani was shared with the students.

III] <u>Teaching chemistry- Beyond the classroom:</u> 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 'Chemistry of Warfare' by Dr Prabodh Chobe organised jointly by the Chemistry and History Department held on 17th July 2021.
- Webinar on 'Applications of Radioisotopes in Healthcare: with emphasis on Radiopharmaceuticals' by Dr. Meera Venkatesh organised by the Chemistry Department in collaboration with IWSA on 24th July 2021.
- Webinar on 'Handling women's health in covid times' by Dr. Mukesh Gupta on 28th September 2021.

ii) Literature surveys/ research work under EXSP program-

- a) Literature surveys Guided Ms Iqra Patel of TYBSc in her literature survey component 'Synthetic Biodegradable Polymers' RK
- b) Guided Ms Mariyah Khatri of TYBSc in her literature survey component 'Colour Psycology' PS

b) Research projects: NIL

iii) Chemistry Club: Sr. R.Khandagale and Ms. L.Jeysus are the co-coordinators of the club for 2021-22. Activities organized in the College as as follows:

- Chemistry Quiz 'GENIUS' for the Junior College students organised by the TYBSc students via Zoom Platform on 30th July 2021.
- Department logo making competition for UG and PG students.
- National Level Quiz 'Yeh Mera India' Commemorating the 75th Independence Day organised by the SYBSc and TYBSc students via Google forms on 15th August 2021.
- Intra Collegiate Digital Poster Making Competition for UG and Junior College students commemorating the 110th year and centenary year of Nobel Prize winners Marie Curie and Einstein respectively organised by the SYBSc students.

Students were also encouraged to participate in a number of inter collegiate events:

- 33rd All India Online Essay Contest on Nuclear Science and Technology on 16th August 2021 -(5 students)
- Think like a Proton and Stay positive Quiz organised by SIWS College on 20th July 2021. (17 students)
- Fundamentals of Chemistry Quiz competition organised by Rajiv Gandhi College of Art, commerce and Science on 23rd August 2021.(14 students)
- Mission O₃ Quiz organised by K. J. Somaiya College on 16th September 2021. (2 students)

iv) Field trips: Nil

IV] Other activities organized by the Department: i) Creating awareness: Nil

ii) Student development activities: :

- MSc students completed an E-internship on Computational Tools in Chemistry organised by Jai Hind College from 7th to 12th June 2021.
- TYBSc and SYBSc students were a part of the outreach program with Aseema, wherein each student was assigned two students from a Municipal school to conduct online classes on a assigned topic biweekly for a month. Co-ordinated by SM, Teacher mentors IM,SM,RF,TA,LJ,RK,AQ,AM
- Conducted a session on higher education opportunities in India and abroad for TYBSc students in September 2021-RF
- Students participated in the 37th Aptitude test in Chemistry organised by ICT and K.C. College on 26th September 2021

iii) Student follow up through contact group:

iv) Staff-student fun activities:

v) Others:

- RBPT project assigned to students of TYBSc to extract dye from natural sources available at home and dye fabric using the extracted dye, and vary a parameter (like fastness, type of fabric etc.) compare the effect of the parameter on the hue and submit a report with pictures of the dyed fabric.

-Peer teaching, students presented on the life of scientists like Marie Curie and Lise Meitner during the lectures and had a discussion after.-IM

B] <u>STAFF ACTIVITIES:</u>

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

- Goal sharing meeting on 17th June 2021.Attended by IM,PS,RF,SM,TA,LJ,RK and AQ.
- International Webinar on 'ChemLibreText as an Open Education Resource' by Dr Delmar Larsen for the Chemistry Teachers all over India, organised by the Chemistry Department on 9th July 2021.Attended by IM,PS,RF,SM,TA,LJ,RK,AM and AQ.
- Webinar on 'Launching Add-on courses: Key Components' by Dr Roshan D'souza on 10th July 2021.Attended by IM,PS,RF,SM,TA,LJ,RK and AQ.
- Webinar on 'Chemistry of Warfare' by Dr Prabodh Chobe organised by the Chemistry and History Department held on 17th July 2021.Attended by IM,PS,RF,SM,TA,LJ,RK and AQ.
- Webinar on 'Applications of Radioisotopes in Healthcare: with emphasis on Radiopharmaceuticals' by Dr. Meera Venkatesh organised by the Chemistry

Department in collaboration with IWSA on 24th July 2021.Attended by IM,PS,RF,SM,TA,LJ,RK and AQ.

- 'Virtual Safari of Tadoba National Park' organised by Nature Club in collaboration with the Zoology Department by Dr Sudhir Gaikwad on 24th July 2021. Attended by TA and LJ.
- Chemistry Quiz 'GENIUS' for the Junior College students organised by the TYBSc students via Zoom Platform on 30th July 2021.Attended by IM,PS,RF,SM,TA,LJ and RK.
- 'PCOD & other menstruation related problems in Women' by Dr Mukesh Gupta organised by Microbiology Department on 3rd August 2021. Attended by LJ
- Webinar on 'Mindfulness Nikhila Sharma CFM Global' organized by Psychology department on 20th August 2021 attended by RK
- 'Scientific Temper: Antidote To Superstitious beliefs' organised by Life Science Department in collaboration with NSS on 20th August 2021.Attended by PS, RK, LJ, RF.
- Teachers day celebration organised by the CUC on 4th September 2021. Attended by PS,RF,SM,TA,LJ, RK, and AM
- '10 ways to Mindful Eating and Healthy Living' by Ms Vibha Hasija organised by NSS Unit on 8th September 2021.Attended by RF,LJ,TA
- Academic Audit on 20th September 2021. Presented by PS attended by RF,SM,TA,LJ, RK, AM and AQ.
- 'Archaeobroma-the archaeology of food' by Dr. Kurush Dalal organised by the History Department on 25th September 2021.Attended by LJ, RK
- Handling women's health in covid times by Dr. Mukesh Gupta on 28th September 2021.Attended by PS,RF,SM,TA,LJ,RK, AM and AQ.

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

- Three week course on '*Gateway to Health- Essential Oral Hygiene and Habits for a Healthy Smile* OE4BW-UNESCO program' May-June 2021.Attended by TA
- Webinar on 'World Environment Day' on 5th June 2021 organised by K J Somaiya College of Arts and Commerce, Vidyavihar. Attended by TA
- National workshop on 'Current practices for Assessment in teaching and learning Process' - organized by Chandigarh University on 25th June 2021 - Attended by RK
- Webinar on "CAREER PROSPECTS IN CHEMISTRY" organized by CCSMC & DEPARTMENT OF CHEMISTRY on 7th July 2021 organized by Maharashtra College. Attended by TA
- Webinar on "Strengthening Your Understanding of Research Journals" KJSSC-Elsevier, 10th July 2021.Attended by TA
- National Webinar on Recent Advances in Chemistry organized by Department of Chemistry, Govt. Gajanand Agrawal Post Graduate College, Bhatapara (C.G.) on 26th July 2021. Attended by TA

III] Contribution to Department and College administration/activities:

i) Dr P Shetty

- a) Head of the department
- b) Member of BOS-Chemistry Sophia College (Autonomous)
- c) Science stores In-charge
- d) M.Sc Part II class In-charge
- e) Member of Academic audit committee
- f) MSc exam committee member
- g) NAAC infrastructure committee member
- h) Incharge for keeping Alumni record

ii) Ms. R Ferns

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

iii) 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

iv) 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

v) Ms L.Jeysus

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Co-ordinator –MSc Analytical Chemistry
- c) Co-ordinator-Chem Club
- d) Member-IQAC documentation, feedback sub committee
- e) Member-Teaching Learning and evaluation -NAAC sub committee

vi) Sr. R.Khandagale

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Hostel Dean
- c) Co-ordinator-Chem Club.
- d) FYBSc class In-charge.
- e) Member-Student Support and progression NAAC sub committee
- f) Member Student welfare committee
- g) Member Attendance committee (Science)
- h) Star College coordinator for Chemistry Department

IV] Contribution to Quality Assurance Diploma program

V] Contribution to NSS activities:

VI] Professional development:

Two week FDP "Chemistry-The Catalyst for Change" organized by TLC Ramanujan College, University of Delhi under the aegis of Ministry of education PMMMNMTT from 14th July -28th July 2021. Attended by TA

VII] Staff research:

VIII] A. Research publications: nil

VIII B. Other publications: Educational resource

Publication on OER/Creative common sites-PS

IX] Examination work

i)Dr. I. Mendes:

- a. Assessment of MSc Semester II- Paper I presentations on 23rd June 2021.
- b. Paper setter and Examiner for MSc Semester II (Paper I) Practical Examination held in July 2021

ii) Dr. P. Shetty:

- a. Paper setting and assessment of MSc Semester I ATKT-Paper III held in July 2021
- b. Paper setter and Examiner for MSc Semester II (Paper IV) Practical Examination held in July 2021.
- c. Paper setter and practical examiner for TYBSc Semester V Paper IV held in October 2021.
- d. Paper Setting, assessment of SEE and IA papers of Sem III and V.
- e. Paper setter and Examiner for SYBSc Practical Examination held in October 2021.
- f. Invigilation of Odd Semester End Examination.

g. Paper Setting and assessment of IA of MSc Semester I-Paper IV and Semester III-Paper I

iii) Ms. R. Ferns:

- a. Paper setter and practical examiner for TYBSc Semester V Paper II held in October 2021.
- b. Paper Setting, assessment of SEE and IA papers of Sem III and V.
- c. Paper setter and Examiner for SYBSc Practical Examination held in October 2021.
- d. Invigilation of Odd Semester End Examination.
- e. Paper Setting and assessment of IA of MSc Semester I-Paper II.

iv) Dr. S. Murthy:

- a. Paper setting and assessment of MSc Semester I ATKT-Paper III held in July 2021
- b. Paper Setter and Examiner for MSc Semester II (Paper III) Practical Examination held in July 2021.
- c. Paper setter and Examiner for TYBSc Semester V Paper III Practical Examination held in October 2021.
- e. Paper setter and Examiner for SYBSc Practical Examination held in October 2021.
- f. Paper Setting, assessment of SEE and IA papers of Sem III and V.
- g. Invigilation of Odd Semester End Examination.

v) Ms. T. Asha:

- a. Invigilation of ATKT examination held in June 2021
- b. Paper setter and Examiner for MSc Semester II (Paper II) Practical Examination held in July 2021
- c. Paper setter and Examiner for TYBSc Semester V Paper I Practical examination held in October 2021.
- d. Paper Setting, assessment of SEE and IA papers of Semester V.
- e. Invigilation of Odd Semester End Examination.
- f. Paper Setting and assessment of IA of MSc Semester I-Paper II and Semester III-Paper I, II and III.

vii) Ms. L.Jeysus:

- a. Assessment of MSc Semester I- Paper III presentations on 28th June 2021.
- b. Invigilation of ATKT examination held in June 2021
- c. Paper setting and assessment of MSc Semester I ATKT-Paper III held in July 2021
- d. Invigilation of MSc Semester II examination held in August 2021.

- e. Paper setter and examiner for SYBSc ATKT Practical Examination held in July 2021.
- f. Paper setter and examiner for TYBSc Semester V Paper III and Applied Component Practical examination held in October 2021.
- g. Paper setter and Examiner for SYBSc Practical Examination held in October 2021.
- h. Paper Setting, assessment of SEE and IA papers of Sem V.
- i.Invigilation of Odd Semester End Examination.
- j. Paper Setting and Assessment of IA of MSc Semester I-Paper III.
- k. Assessment of MSc Semester III- Paper IV presentations on 27th October 2021.

vii) Sr. R.Khandagale:

- a. Invigilation of ATKT examination June 2021
- b. Invigilation of MSc Semester II examination August 2021
- c. Paper Setting, assessment of SEE and IA papers of Sem III and V.
- d. Invigilation of Odd Semester End Examination October 2021
- e. Paper Setting and Assessment of IA of MSc Semester I-Paper I.
- f. Invigilation of MSc Semester II examination August 2021
- g. Paper setter and Examiner for TYBSc Semester V, Paper IV and AC Practical examination held in October 2021.

viii) Ms. Anjali Menon

- a. Paper Setting, assessment of SEE and IA papers of Semester III and V.
- b. Invigilation of Odd Semester End Examination.
- c. Paper Setting and Assessment of IA of MSc Semester I-Paper I.
- d. Assessment of MSc Semester III Paper I presentation on 25th October 2021.

ix) Ms. A. Quidiri

- a. Paper setting and assessment and Invigilation of MSc Semester I ATKT-Paper IV held in July 2021.
- b. Invigilation of MSc SEE and ATKT examinations.

IX] Consultancy/Subject related work outside the college:

- Appointed in Screening and Evaluation Committee for CAS held at Khalsa College on 30th June 2021- IM
- MSc part II semester III lectures for cluster college -PS,TA

X] Others:

• Conducted Interviews for the M.Sc Part I Admissions on 7th and 12th July 2021 -Dr. I.A.Mendes, Dr.P.Shetty, Dr. R. Ferns and Ms. L.Jeysus.

- TYBSc students and Staff organized a cultural program for Dr. Mendes' farewell on 31st July 2021.
- Attended Cluster College Meeting for MSc Part II on 4th August 2021-Dr.P.Shetty and Ms. L.Jeysus.
- Judged Dept logo making competition and Poster making competition organised by Chem Club- IM
- Conducted Orientation for MSc Part I on 7th August 2021and Part -II on 18th August 2021. PS,LJ and AQ
- Students of TYBSc organised an online teachers day celebration on 6th September 2021. Attended by PS,RF,SM,TA,LJ, RK and AM.
- Meeting with IWSA members to discuss student internships on 17th August 2021-Attended by SM,RF,TA,LJ,RK,AQ.
- Meeting with Aseema incharge and teachers on 1st September 2021.-Attended by PS, SM, RF,TA,LJ,RK,AM,AQ.
- Meeting with Aseema incharge, teachers and Sophia college student volunteers on 7th September 2021. Attended by SM, RF,TA,LJ,RK,AM,AQ.
- Advisor for Academic Audit for the year 2019-20 and 2020-21-IM
- Dussehra Puja on 14th October 2021.
- Co- ordinated international online credit courses in collaboration with Indian Astrobiological Research Foundation (IARF) RK
 - o IPWI 2021 1 credit course 57 students completed the course
 - o COP 25 (7 students) and RIO 26 (16 students) 1 credit each course
 - o International World Climate Quiz 2021 (approx 100 students have registered)

P. Sha

Dr. Prabha Shetty Associate Professor Head, Department of Chemistry Sophia College (Autonomous) Date: 30/11/2021

DEPARTMENT OF CHEMISTRY REPORT OF SECOND TERM 2021-22

Name of Staff:

Senior College:

- 1. Dr. P.Shetty (Department Head)
- 2. Ms. R.Ferns
- 3. Dr. S.Murthy
- 4. Ms. T.Asha

- 5. Ms. L.Jeysus
- 6. Sr. R.Khandagale
- 7. Ms. A. Quadiri
- 8. Ms. A. Menon

Junior College:

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

A] TEACHING AND LEARNING:

I] <u>Teaching Aids used:</u> 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, chemistry molecular model kit:** Molecular models 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:** As practicals were conducted in the online/hybrid mode the following practicals were demonstrated via zoom platform:
 - To determine the amount of nickel ions (as nickel-dmg) in the given solution gravimetrically for SYBSc class-LJ
 - Qualitative analysis of organic compounds for FYBSc, SYBSc and TYBSc classes. PS,LJ,SM,TA,RK.
 - Ion exchange chromatography, Determination of vitamin C content in a given tablet for TYBSc class-RK
 - Estimation of fluoride in a given solution for TYBSc class- RK
 - Recrystallization of compounds for FYBSc class- TA, RK ,AM
 - Setting up distillation apparatus and physical separation of a mixture for TYBSc class. SM,LJ.
 - Organic spotting for different functional groups for FYBSc class-TA

iii. Use of PowerPoint presentations by staff:

- Powerpoint presentations were prepared for all the topics and subtopics in the syllabus -PS, SM, RF, TA, RK, LJ,AQ, and AM
- Interactive PPTs were also used-PS,LJ,TA

iv. Creative activities used for teaching chemistry:

• Relevant videos on various topics were shown during lectures. PS, SM, RF, TA, RK, LJ,AQ and AM.

- Applications like pubchem, chemtube3D.com were used to show the 3D structures of molecules for better understanding of spectroscopy and molecules SM, RK
- Assigned Jamboard activities SM
- Applications like chemdraw were used to familiarize students with the distillation apparatus and the set up-LJ
- Demonstrated how to prepare graphs using excel.-LJ.
- Simulations were used to explain Water Quality Parameters, TLC, pH metry graphs, uv-visible spectrophotometry -PS
- Flipped classroom: videos and PDF were sent before the classroom and then the topic was discussed in the class.PS,RK
- Shared Infographic for revision on pollution, Interactive PDF from various sites shared e-books and important links of reference material and videos, video recording of lectures (powerpoint screen recorder and Screencast O'Matic)
- Used Doceri application to teach through blackboard and zoom whiteboard for students to interact-SM
- Used Chem-Libre text document AM SM
- Open book test on Chemistry of Biomolecules for TYBSc students.-LJ
- As we were using an online medium of teaching, a number of quizzes were conducted before/during/ after the lecture/practical to check the understanding of the various concepts taught in the lecture/practical. The following applications were used for administering the quizzes: Google forms, nearpod, testmoz, PPT, crossword labs,socrative, quizizz. LJ,AM,PS,RK,TA

v. Other teaching strategies

Worksheets were provided to students on topics like:

- Stereochemistry for FYBSc class-LJ
- Aromatic Hydrocarbons and Stereochemistry II for FYBSc class-LJ
- Chemistry of Aliphatic Hydrocarbons for FYBSc class-LJ
- Numericals on physical chemistry topics for FYBSc class-TA
- Oxidation and reduction chemistry for FYBSc class RK
- Carbohydrate Chemistry for TYBSc class -LJ
- Interconversions of Haworth and Fischer projections for TYBSc class-LJ
- Stereochemistry for TYBSc class-LJ
- Numerical on precipitation and redox titrations for TYBSc class- PS
- Exercises and assignments were given onUV, IR, H-NMR and Mass Spectra for TYBSc class SM
- Numericals on Quantum mechanics and polymers for TYBSc class RK
- Inorganic chemistry unit 2&4 -TA

Enabling higher order thinking skills in students by assigning creative activities:

- Infographic on Enantiomers for FYBSc class -LJ
- Creation of Concept map for Chemistry of Alkenes for FYBSc class -LJ

- PPT on use of natural indicators to test day to day products available at home to identify their nature. The activity was conducted individually or in groups for FYBSc class-TA
- Record a video of various experiments, to understand the different gas laws, performed at home using objects/ingredients available in their kitchen for FYBSc class-TA
- Infographic on Effluent Treatment Plant for SYBSc class-PS
- Innovative infographic/presentation/Quizz on applications of phenols, carboxylic acids and uses of PTSA (para toluene sulphonic acid) for SYBSc class-SM
- Infographic on Chromatographic techniques for TYBSc class-PS
- Use of Miro application on applications of Quantum and Polymers for TYBSc class RK
- Infographics on HPTLC, GPC and GC for MSc Part I class-PS
- Infographic on Quantum mechanics for TYBSc and MSc Part II class- RK

II] <u>Teaching learning in the laboratory:</u>

- Used various simulations and videos for demonstration of virtual practicals -PS, SM, RF, TA,LJ, RK,AQ, AM.
- Pre-lab and post-lab assignments-PS, LJ, RK, TA, SM
- Interactive worksheets were prepared -PS
- Experiment applets were shared to study:
 The different pH potential curve, effect of number of plates on separation for HETP TYBSc class-PS
 - GC-MS for MSc. class-PS
- Video recording of the experiments were done and were shared with the students - Estimation of equivalent weight of an acid-LJ
 - Potentiometric titration of iron vs chromate-LJ
 - Analysis of monel metal-SM,LJ

- Setting up distillation apparatus and carrying out physical separation of mixture SM-LJ

- Colorimetric estimation of Copper.-SM,LJ

- Project on Dyeing of Fabric using synthetic dyes of different classes based on their application, using different fabrics (cotton/silk) to have a comparative study on takeup of dye.-LJ,TA
- Extraction of limonene from orange peel -LJ,SM
- To study the phase diagram of three component system Toluene-Acetic acid -water was performed under star college experiments -TA,AM

III] <u>Teaching chemistry- Beyond the classroom:</u> 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:

• Panel Discussion on 'Chemistry of Moods' by Dr Avinash De souza,

Ms Samindara Sawant and Dr. Ratna Rajethar organised by the department of Chemistry in collaboration with the Department of Psychology on 20th November 2021. Faculty In-charge PS.

- Webinar on 'Nanoscience, environment and energy : a Chemist's perspective' by Dr Deepa Khushalani and 'Nobel Laureates who have changed our world: perfect examples of hope, courage and resilience' by Dr Prabodh Chobe organised by Chemistry Department in Association with Royal society of Chemistry on 4th December 2021.(Department Ananya Activity) Faculty In-charge TA
- 20th Annual Nobel Oration on 'Asymmetric Catalysis with small organic molecules' by Dr. Santanu Mukherji on 28th January 2022. Faculty In-charge SM,TA

ii) Literature surveys/ research work-

a) Seminar Component: (EXSP)

- Ms. Arabia and Ms. Vidushi Kandpal on "Synthesis of green nano pesticides for mosquitoes" under the guidance of Sr. Rajani Khandagale.
- Ms. Pragati Singh and Nidhi Shirali on "Effect of fluoride on tooth enamel" under the guidance of Sr. RajaniKhandagale.

b) Literature surveys - MSc Students

- 'Extraction, isolation and application of anthraquinone derivative from plant' by Ms Payal Manna under the guidance of Dr. Prabha Shetty.
- 'Nano-fertilizers' by Ms Bency Jose under the guidance of Ms Rochelle Ferns.
- 'Trace/Element/Heavy metal analysis' by Khushi Thakur under the guidance of Ms Rochelle Ferns.
- 'Pesticide residue analysis in food products' by Achsah Bommera under the guidance of Dr Sirisha Murthy.
- Instrumental analysis of ions present in drinking water by Ms. Sherin Sibi under the guidance of Dr Sirisha Murthy.
- Extraction and Characterization of silica from rice husks by Jisha Joseph under the guidance of Ms Tanaz Asha.
- 'XRD for Characterisation of Fe nanoparticles' by Ms. Yogita Kundap under the guidance of Ms Tanaz Asha.
- Isolation and extraction of Pectin by Shriya Pai under the guidance of Sr. Rajani Khandagale.
- Application of nanomaterials in Biomedical science by Mr Mitesh Patil under the guidance of Ms Lynelle Jeysus
- Analysis of inhalation products by Angel Matthew under the guidance of Ms. Anjali Menon

c) Research projects: Survey Based (EXSP)

- Ms. Sharmin Kika on "IgE mediated food allergies and its prevalence' under the guidance of Ms. Lynelle Jeysus.
- Ms. Mariyah Khatri on "Colour Psychology" under the guidance of Dr. Prabha Shetty.

Both the students participated and submitted research proposals on their respective topics for the UG level selection round of 16th Intercollegiate Avishkar Research Convention 2021-22.

iii) Chemistry Club: Sr. R.Khandagale and Ms. L.Jeysus are the co-coordinators of the club for 2021-22. Activities organized in the College as as follows:

- Chemistry Quiz 'CHEMQUEEN' for the Junior College students of Sophia College organised by the MSc-Part II students via Zoom Platform on 29th January 2022.
- Intercollegiate Competition Chemscope comprising of 4 events: Chem Rush (Treasure Hunt), Chem Proximation (Quiz), Chem a Doodle do (Doodle Competition) and Word Combat (Debate) organised by TYBSc and SYBSc students via Zoom platform on 16th and 17th February 2022
- Intracollegiate Singing and Dance Competition ' Unleash You' Commemorating 75th Year of Independence Amrit ka Mahotsav organised by MSc Part I students.
- Students were also encouraged to participate in a number of inter and intra collegiate events:
- 'Utopia' organised by Satish Dnyanasashana College, Thane (14 students)
 Ms. Shruti Achary won first prize in singing competition
- 'MIMASA' organise by IISER, Pune.(7 students)
- 'Alchemia' organised by St Xaviers College (5 students)
- Chem Cruise organised by Bhavans College (2 students)
- Science Fest organised by Sophia College to commemorate Science Day Cartoon Making: Inspiring Stories of Scientists -(5 students)

iv) Field trips: Nil

IV] Other activities organized by the Department:

i) Creating awareness:

Students participated in International online credit courses conducted by the Indian Astrological Research Foundation (IARF) Co-ordinated by Sr Rajani Khandagale

- One credit course on International Year of Plant health
- COP -26 and RIO -25
- Climate Quiz

ii) Student development activities: :

- Peer Teaching on topics such as carbohydrates, amino acids, proteins and nucleic acids by TYBSc students
- Students of SYBSc and TYBSc volunteered for conducting chemistry related experiments and activities for school students of Villa Theresa and St Stevens hosted by Sophia College, as an initiative by DBT star "Science ADDA" on 28th February 2022.
- Conducted RUSA sponsored One Credit course on 'Positive Health in Women' from 16th to 30th November 2022-Co-ordinated by PS

- MSc students completed hands-on training on HPTLC at Anchrom Laboratory.
- Summer Internship for all MSc students at ICT(7 students), FDA(9 students), Chemotest Laboratory (6 students).
- SYBSc students were a part of the outreach program 'Each one teach one' organised by IWSA, wherein each student was assigned a student from to conduct online classes on a assigned topic biweekly for a month. Co-ordinated by SM
- All Chem club activities are organised by students to develop planning and organizational skills in students.

iii) Student follow up through contact group:

Every student studying chemistry is assigned a contact teacher who follows up their academic progress/ problems through the year.

iv) Staff-student fun activities:

Intracollegiate Singing and Dance Competition ' Unleash You' Commemorating 75th Year of Independence Amrit ka Mahotsav organised by MSc Part I students. -Chem Club under Star Status

v) Others:

B] <u>STAFF ACTIVITIES:</u>

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

- Panel Discussion on 'Chemistry of Moods'by Dr Avinash De souza, Ms Samindara Sawant and Dr. Ratna Rajethar organised by the department of Chemistry in collaboration with the Department of Psychology on 20th November 2021. Attended by PS,SM,RF,TA,LJ, RK,AQ and AM.
- Online Prize Distribution Ceremony for the year 2019-20 on 4th December 2021-Attended by PS,SM,RF,TA,LJ, RK,AQ and AM.
- Webinar on 'Nanoscience, environment and energy : a Chemists perspective' by Dr Deepa Khushalani and 'Nobel Laureates who have changed our world: perfect examples of hope, courage and resilience' by Dr Prabodh Chobe organised by Chemistry Department in Association with Royal society of Chemistry on 4th December 2021. Attended by PS,SM,RF,TA,LJ, RK,AQ and AM.
- Training Session on the use of Smart boards on 10th December 2021. Attended by SM,TA,LJ, RK,AQ and AM.
- College Day Celebration on 11th December 2021. Attended by PS,SM,RF,TA,LJ, RK,AQ and AM.
- Online college Day Celebration organised by CUC on 11th December 2021. Attended by TA,LJ, RK
- Christmas Wishing organised by ACS on 23rd December 2021. Attended by TA
- Nobel Oration 'Just a touch of chilli.NO pressure!!! Can you take the heat?' by Dr Shubha Tole organised by the department of Life Sciences on 14th January 2022. Attended by LJ

- Seventh BoS meeting to discuss revision of MSc Part I syllabus on 21st January 2022. Attended by PS,SM,RF,TA,LJ, RK,AQ and AM
- EXAP and EXSP Prize Distribution Ceremony on 21st January 2022. Attended by SM,LJ,TA,RK
- 20th Annual Nobel Oration on 'Asymmetric Catalysis with small organic molecules' by Dr. Shantanu Mukherji organised by the Department of Chemistry on 28th January 2022. Attended by PS,SM,RF,TA,LJ, RK,AQ and AM
- Chemistry Quiz 'CHEMQUEEN' for the Junior College students organised by theChem Club on 29th January 2022. Attended by PS,TA,RK,LJ,AQ
- Session on 'Human Values and Ethics' organised by NSS unit and Department of Psychology on 9th February 2022. Attended by LJ, RK
- Webinar on 'Conservation of Sea Turtles' organised by the Department of Zoology on 12th February 2022. Attended by LJ
- Chem Rush intercollegiate treasure hunt organised by Chem Club on 17th February 2022. Attended by SM,TA, RK,LJ
- Chem Proximation intercollegiate quiz competition organised by Chem Club on 18th February 2022. Attended by SM,TA, RK,LJ
- Word Combat intercollegiate debate competition organised by Chem Club on 18th February 2022. Attended by PS,TA, RK,LJ and AQ
- EXSP research component Presentations on 5th March 2022. Attended by PS,SM,RK,LJ.
- Prize Distribution and Degree Conferring Ceremony for batch 2020-21on 16th March 2022. Attended by TA, LJ
- Quality Assurance Diploma Conferring Ceremony held on 26th March 2022. Attended by PS, SM,RK, LJ,AQ and AM.
- Farewell of Dr. Sr Ananda on 31st March PS AM
- Eighth BoS meeting to discuss revision of MSc Part II syllabus on 11th April 2022. Attended by PS,SM,RF,TA,LJ, RK andAQ.
- IQAC Annual Conference- "Wellness Management: Nutrition and Therapy" on 29th April 2022, Attended by PS,SM,RF,TA,LJ, RK.AM andAQ.
- Attended Farewell/ Felicitation of Staff members on 30th April 2022. Attended by PS,SM,RF,TA,LJ, RK andAQ.
- Attended the Orientation session of EXSP- Seminar Component on 27th March 2022

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

- Attended the MS-DEED online training program conducted by IISER, Pune from 11th 13th January 2022 -TA
- National conference "Advance materials in research and industries" organized by Government college of Arts & Science, Aurangabad on 28th January 2022.TA
- One day State level workshop "Designing effective powerpoint presentation" organised Yashwant Mahavidyalaya, Wardha on 5th February 2022.TA
- International online seminar "Emerging methodologies in biopolymer Science ISEMBS-2022" organised by CHM college, Ulhasnagar on 12th February 2022.TA, RK

 International webinar "Empowering Diversity in Science" by ACT on 16th February 2022. TA

III] Contribution to Department and College administration/activities:

i) Dr P Shetty

- a) Head of the department
- b) Member of BOS-Chemistry Sophia College (Autonomous)
- c) M.Sc Part II class In-charge
- d) Member of Academic audit committee
- e) MSc exam committee member
- f) NAAC infrastructure committee member
- g) Incharge for keeping Alumni record

ii) Ms. R Ferns

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

iii) Dr S Murthy:

- a) Star Status Co-ordinator- for the College
- 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

iv) Ms. T Asha:

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

v) Ms L.Jeysus

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Co-ordinator –MSc Analytical Chemistry
- c) Co-ordinator- Chem Club
- d) Member-IQAC documentation, feedback sub committee
- e) Member-Teaching Learning and evaluation -NAAC sub committee

vi) Sr. R.Khandagale

- a) Co-opted Member of BOS-Chemistry Sophia College (Autonomous)
- b) Hostel Dean
- c) Co-ordinator- Chem Club.
- d) FYBSc class In-charge.
- e) Star College coordinator for Chemistry Department
- f) Member-Student Support and progression NAAC sub committee
- g) Member Student welfare committee
- h) Member Attendance committee (Science)

IV] Contribution to Quality Assurance Diploma program

V] Contribution to NSS activities:

VI] Professional development:

Completed with an A grade an online Interdisciplinary Refresher Course on Research Methodology and Data Analysis from 21st February 2022 to 5th March 2022 organized by Ramanujan College, Delhi. SM

VII] Staff research:

RUSA sponsored outreach project entitled "To study and verify that students learn and retain conceptual science by 'Doing' it".-PS

VIII] A. Research publications: nil

VIII B. Other publications: Educational resource OER/Creative common sites

- Simulations of semi micro qualitative analysis (2) -LJ
- Concept map on preparation of alkenes (13)-LJ
- Infographic on Chromatography by the TYBSc student-PS

IX] Examination work

i) Dr. P. Shetty:

- a. Paper setter and Examiner for MSc Semester IV (Paper II) Practical Examination held in April 2022.
- b. MSc Sem II (Paper 4-one unit) paper setting and answer key.
- c. MSc Sem IV-Paper II assessment.
- d. Paper setter and practical examiner for TYBSc Semester VI Paper IV held in March 2022.
- e. Paper Setting, assessment of SEE and IA papers of Sem IV and VI.
- f. Paper setter and Examiner for SYBSc Practical Examination held in April 2022.
- g. Invigilation of Even Semester End Examination.

h. Paper Setting and assessment of IA of MSc Semester II-Paper IV.

iii) Ms. R. Ferns:

- a. Paper setter and examiner for SYBSc Practical Examination held in April 2022.
- b. Paper Setting and assessment of SEE and IA papers of Sem IV and VI.

iv) Dr. S. Murthy:

- a. Paper Setting, Invigilation and Assessment of ATKT University (75:25) Examination Semester VI Paper II (3 Units)
- b. Assessment of MSc presentations Paper III Semester II.
- c. Paper setter and examiner for TYBSc Practical Examination Paper III held in March 2022.
- d.Paper setter and examiner for SYBSc Practical Examination held in April 2022.
- e. Examiner for MSc Semester IV Group C Practical Examination on 9th April 2022.
- f. Paper Setting and assessment of SEE and IA papers of Sem IV and VI.

g.Paper Setting and assessment of MSc SEE and IA papers of Sem II h.Invigilation of Even Semester End Examination.

v) Ms. T. Asha:

- a. Invigilation of ATKT odd semester examinations- March 2022
- b. Paper setter and Examiner for MSc Semester II (Paper IV) and Semester IV (GroupA)Practical Examination held in April 2022.
- c. Paper setter and Examiner for TYBSc Semester VI Paper I, Paper II, Applied component Practical examination held in March/April 2022.
- d. Paper Setting, assessment of SEE and IA paper II & IV of Semester VI.
- e. Invigilation of Even Semester End Examination.
- f. Paper Setting and assessment of IA of MSc Semester IV-Paper I andII and online course for Sem 2 paper 2.
- g. Paper setting and assessment for MSc Semester II paper II and Semester IV paper I. Paper setting of MSc semester 2 paper 2 & 4.

vii) Ms. L.Jeysus:

- a. Paper Setting, Invigilation and Assessment of ATKT University (75:25) Examination Semester VI Paper II (3 Units)
- b. Paper Setting, Invigilation and Assessment of Semester III ATKT Practical Examination in December 2021
- c. Invigilation of MSc Semester III end examination held in December 2021.
- d. Invigilation of MSc Semester I end examination held in January 2022.
- c. Assessment of MSc presentations Paper III Semester IV on 22nd March 2022.

- f. Invigilation of Semester I ATKT Examination in March 2022.
- g. Paper setter and examiner for TYBSc Practical Examination Paper III held in March 2022.
- h.Paper setter and examiner for SYBSc Practical Examination held in April 2022.
- i. Expert for MSc Semester IV Group C Practical Examination on 9th April 2022.
- j. Laboratory Supervisor for MSc Semester IV and II Practical Examination held in April 2022.
- k. Paper setter and examiner for MSc Semester II Practical Examination Paper III held on 19th April 2022.
- 1. Paper Setting and assessment of SEE and IA papers of Sem II and VI.
- m.Paper Setting and assessment of MSc SEE and IA papers of Sem II n.Invigilation of Even Semester End Examination.

vii) Sr. R.Khandagale:

- a. Paper setting and invigilation of ATKT examination March 2022
- b. Paper setter and examiner for MSc Semester II Practical Examination Paper II held on 18th April 2022
- c. Examiner for TYBSc P IV and AC practical examination held in April 2022
- d. Paper Setting and assessment of SEE and IA papers of Sem II, VI and VI
- e. Paper setting and assessment of MSc I sem II IA
- f. Paper setting and assessment of MSc sem II and IV paper IV
- g. Invigilation of Even semester examination
- h. Expert for MSc Semester IV Group A Practical Examination on 7th April 2022

viii) Ms. Anjali Menon

- a. Paper Setting, invigilation and assessment of SEE and IA paper I of Sem IV and VI.
- b. Invigilation of SYBSc Semester IV Paper II SEE held on 23rd March, 2022.
- c. Practical Paper setter and examiner for MSc Practical Sem I paper I examination held online on 21st of december 2021.
- d. Paper setting,Invigilation and assessment of Odd Semester Practical Examination of FY held online on 3rd and 4th of January2022.
- e. Invigilation of MSc Semester I paper IV examination held online on 10th january 2022.
- f. Invigilation of SYBSc ATKT paper -III SEE held on 11th January 2022.
- g. Paper setting,Invigilation and assessment of Odd Semester ATKT Practical Examination of FY held on 7th March 2022.
- h. Examiner for MSc Practical Sem II paper I examination held on 18th of April 2022.
- i. Practical Paper setter and examiner for TYBSc Sem VI paper I & paper II Practical examination held on 3rd & 4th April, 2022.

- j. Paper setting,Invigilation and assessment of Even Semester Practical Examination of FY held on 13th April 2022.
- k. Paper Setting and assessment of SEE and IA of MSc Sem II, Paper I.
- Junior Supervisor for Even semester end Examination held on 20th,22nd and 26th of April.

ix) Ms. A. Quidiri

- a. Invigilation of MSc Semester III end examination held in December 2021.
- b. Invigilation of MSc Semester I end examination held in January 2022.
- c. Assessment of MSc presentations Paper III Semester IV on 22nd March 2022.
- d. Laboratory Expert for MSc Semester IV and II Practical Examination held in April 2022.
- e. Invigilation of Even Semester End Examination

IX] Consultancy/Subject related work outside the college:

• MSc part II semester IV lectures for cluster college -TA

X] Others:

- Attended Cluster College Meeting for MSc Part II on 5th January 2022-Ms.T Asha and Ms. L.Jeysus.
- Meeting with Mr Patel (IIT Mumbai) on 15th January 2021. Attended by SM,TA, LJ and RK.
- Meeting with Prof. Kale from ICT to discuss possible internship opportunities for MSc students on 16th March 2022 -Dr. P. Shetty, Ms. L. Jeysus
- Organised farewell for laboratory staff Mr. KrishnaWavekar on 16th April 2022.
- Conducted online two sessions on 10th and 11th March on Mindfulness and meditation for the high school students of Sacred Heart School in Warsaw, Poland
 - RK

• Part of Syllabus revision Committee

MSc Part I			
Paper I-RK	Paper II-RF,TA	Paper III-SM,LJ	Paper IV-PS
MSc Part II			
Paper I-RK,AM	Paper II-TA	Paper III-SM,LJ	Paper IV-PS,AQ

P. Sha

Dr. Prabha Shetty Associate Professor Head Department of Chemistry Sophia College (Autonomous) Date: 30//04/2022