WELCOME TO NAAC

PEER TEAM

TTWRDC (GIRLS)

KOTHAGUDEM

KHAMMAM (DISTRICT), TELANGANA STATE-507101

DEPARTMENTAL PROFILE

DEPARTMENT OF CHEMISTRY

CONTENTS

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Objectives:-

The principal aim of Science is to discover the character of the facts which constitute the realities of nature and to approximate as extent as possible the explanation of the facts.

- To import the knowledge of the Chemistry facts, concepts, methods, theories and generalizations.
- To train students in a wide range of Science-based skills that provide the learning base for future careers in disciplines such as Research organizations, Pharmaceutical industries, and Chemical industries.
- To have a greater appreciation of Chemical processes.
- To make them more confident and creative to face the challenges of their careers.
- To help the students pursue other discipline.
- To fulfill the needs of the society of present and future.

DEPARTMENT OF CHEMISTRY

HISTORY OF THE DEPARTMENT

- Department of Chemistry was established in the academic year 2017-2018. Since its inception, the Department was recognized for teaching in the various areas of Chemistry. The Department offers an undergraduate program which is in affiliation with Kakatiya University, Warangal.
- The Department has also implemented the Choice-based Credit System for grading B. Sc students, which offers flexibility in the structuring and assessment of courses. The overall goal of Chemistry Department has been to impart quality education at under graduate level along with continuous efforts on basic and applied aspects of Chemical sciences.

Vision and Mission:-

Vision:

To stimulate the young minds to contribute to the chemically literate society through active participation in learning and research.

Misssion:

To produce skilled in Chemistry with highest professional standard, moral values and well-being to society.

To develop knowledge and skill towards industry as well as research and teaching professional.

SWOC:

Strength:

- Dedicated, well experienced and qualified teaching faculty
- We are conducting PG coaching classes
- Lunch and study facility for day scholar students.

Weakness:

- Entry level knowledge of students in Chemistry is very low.
- Irregularity in attendance.
- Poor & illiterate family background.

Opportunities:

- Students are encouraged towards higher education and research, teaching, government jobs and pharmaceutical industries.

Challenges: Early marriages of girl students.

Highlights of the Department: Achieved 100% results from 2020 academic onwards.

- College toppers are from BSc MZc
- Many students pursuing M.Sc Chemistry into state prestigious Universities like OU, KU.
- Faculty using ICT, Google classroom, PPT's classes.

BSc. Program under CBCS-Chemistry

Semester	Title of the paper	Credits (T+P)	Hours per week	total marks (T+In+P)
I	Chemistry-I	4+1=5	4+3=7	80+20+25=125
AECC	Environmental Science	2	2	40+10=50
II	Chemistry-II	4+1=5	4+3=7	80+20+25=125
III	Chemistry-III	4+1=5	4+3=7	80+20+25=125
IV	Chemistry-IV	4+1=5	4+3=7	80+20+25=125
SEC	RMP & Soil fertility	2	2	40+10=50
V	Spectroscopy & Chromatography	4+1=5	4+3=7	80+20+25=125
VI	Medicinal Chemistry	4+1=5	4+3=7	80+20+25=125

Curriculum Design and Development:

- Our college is affiliated to Kakatiya University Warangal. We strictly follow the curriculum designed by Kakatiya University Warangal.
- From the academic year 2017-2018 onwards CBCS has been introduced with combination of BZC (Botany, Zoology and Chemistry), MPC (Maths, Physics and Chemistry).
- From 2018-19 academic year onwards BSc MZC, a new combination was introduced.

Program/Courses Offered:

- BSc - Maths, Physics, **Chemistry**.
- BSc - Botany, Zoology, **Chemistry**.
- BSc - Microbiology, Zoology, **Chemistry**.

Work Load of the Department

Programme B.Sc.	Paper	Theory Hours/week	Practical Batches	Practical Hours	Total
1st Year	I	8	4	8	16
	AECC	2	-	-	2
	II	8	4	8	16
2nd Year	III	8	4	8	16
	I V	8	4	8	16
	SEC 4	2	-	-	2
3rd Year	V	8	2	4	12
	VI	8	2	4	12
					92/week

Prominent Faculty of Chemistry Since 2017

Sl.no	Name of the Lecturer	Qualification	Period		Working/ retired
			From	To	
1	V. Renuka	M.Sc., B.Ed	2017	2018	Not working
2.	G. Revathi	M.Sc., B.Ed	2018	2024	Not working
3.	R. Thirupathamma	M.Sc., B.Ed, SET	2018	2022	Not working
4.	Dr. S. Nageswara Rao	M.Sc., Ph.D, CSIR-JRF	2022	Till today	working
5.	M. Meena	M.Sc., SET	2023	2024	Not working
6.	G. Tejaswini	M.Sc.,CSIR- JRF	2024	Till today	Working
7.	S. Madhavi	M.Sc.,CSIR- NET	2024	Till today	Working

Details of Teaching Staff

Sl. no	Name of the Teaching Staff	Designation	Qualification	Specialization	Experience
1.	Dr. S. Nageswara Rao	Lecturer	M.Sc., Ph.D,CSIR- JRF	Organic Chemistry	02 years
2.	G. Tejaswini	Lecturer	M.Sc.,CSIR- JRF (PhD)	Organic Chemistry	04 months
3.	S. Madhavi	Lecturer	M.Sc.,CSIR- NET (PhD)	Organic Chemistry	16 years

Faculty Profile

Faculty Profile:

1) NAME: **Dr. S. Nageswara Rao**

Designation: Lecturer Qualification: M.Sc., Ph. D, JRF, NET.

Email ID: sadunrao001@gmail.com

Experience: 01

Publication: 01

Book Chapter: 01

Awards: JRF & SRF.

Publication: ^{t}BuOK-BF_3Et_2O mediated synthesis of quinazolin-4(*3H*) ones from 2-Substituted amides with nitriles and aldehydes. V. V. Nomula, **Sadu Nageswara Rao**,* ***Synthetic Communications***, **2021**, *51*, 2602.

Book Chapter: L-Proline Catalyzed Transamidation of Thioamides with Amines. **Sadu Nageswara Rao**, D. C. Mohan, S. Adimurthy * ***Current Topics on Chemistry and Biochemistry*** , **2023**, *8*, 123.

3) NAME: **G. Tejaswini**

Designation: M.Sc, CSIR-JRF

Email ID: tejaswinihcu@gmail.com

Experience: 04 months

NAME: **S. Madhavi**

Designation: M.Sc, B.Ed, CSIR-NET

Email ID: madhu.sadhineni@gmail.com

Experience: 16 years

Faculty Development Programmes:

The members of the Department has been consistently attending refresher and Orientation courses for updating their knowledge in view of the changes that have been taking place in the syllabus. Besides the faculty is attending enthusiastically seminars, symposiums, workshops and conferences regularly organized by Academic staff colleges and University colleges.

In this connection Sri S. Nageswara Rao, Degree Lecturer of Chemistry attended the following courses/programmes.

Attended 2 day's National Seminar for teachers of UG Colleges under KAKATIYA UNIVERSITY Warangal at SR& BGNR Govt. College Khammam from 21-11-2011 to 26-11-2011.

Attended and presented a paper at International conference on "Emerging Trends In Spectroscopic techniques and their Applications" Organised by Department of Chemistry University College for Women Koti, Osmania University Hyderabad, on 3rd, 4th December 2018 with title "Pd (II) Complexes of New tetra dentate Schiff base ligands: Synthesis, Spectral characterization and catalytic activity".

Best Practices:

I. Department of Chemistry is conducting M Sc Entrance coaching from **2019-2020.**

II. The best practice adopted in the Department is making of detergent powder. Students know the knowledge about the making of detergent powder and its chemical composition.

III. Know your chemistry: - The best practice adopted in the department is known about your chemistry. In this every day they can learn 2 names & structures of the chemical compounds at the departmental notice board.

Extension Activities: Department is maintaining rainwater harvesting pit in the college. Participation in institutional Social responsible activities like AIDS Rally, Swatch Bharath, Harithaharam, Eco club activities, Vermicompost maturing, No-plastic campaign, Participation in health Camps, Maintenance of College garden clean & green.

Department of Chemistry Programme Specific Outcomes

- Be versatile in classical laboratory techniques, use instrumental methods for analysis as well as synthesis and follow standardized procedures and regulations in handling and disposal of chemicals.
- Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
- Solve the problem and also think methodically, independently and draw a logical conclusion.
- Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
- Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
- Find out the green route for chemical reaction for sustainable development.
- to inculcate the scientific temperament in the students and outside the scientific community
- Use modern techniques, decent equipments and Chemistry software.
- Be able to integrate knowledge gained in Chemistry to General education courses.
- Be able to access, scout and use the chemical literature and also able to work as a member of a team.

COURSE OUTCOMES

Chemistry-I

CO-1: Students learn chemical bonding and related theories like Fagan's rule, polarity, VSEPR theory, Molecular orbital theory and molecular orbital energy diagrams etc.

CO-2: To learn about the p-block elements emphasizing on structures of Diborane and higher boranes, Carbides and nitrites and properties.

CO-3: To make an understanding of structural theory in organic chemistry like bond polarization, applications of inductive effect, basicity of amines and carboxylic acids.

CO-4: Acyclic hydrocarbons of alkanes, alkenes and alkynes preparation and chemical properties and aromatic hydrocarbon observations.

CO-5: To know about basic concepts of physical chemistry of atomic structure and elementary quantum mechanics, gaseous state and liquid state.

Chemistry-II

CO-1 To learn about inorganic chemistry concepts like p-block elements of oxides, oxyacidsinter halogens and pseudo halogens.

CO-2: Zero group elements and d-block elements properties and applications.

CO-3: Obtain knowledge about halogen compounds, alcohols, phenols, ethers and carbonyl compounds

CO-4: To gain knowledge about theory of quantitative analysis, stereochemistryand Colligative properties.

Chemistry-III

CO-1: Students learn inorganic chemistry of f block elements and co-ordination compounds.

CO-2: In organic chemistry students able to learn carboxylic acids and derivatives, nitro hydrocarbons and amines, cyanides and isocyanides.

CO-3: In physical chemistry students acquire the subject of thermodynamics and its laws, applications CO-4: General chemistry gives knowledge about evaluation of analytical data,carbon ions and phase rule.

Chemistry-IV

CO-1: In inorganic chemistry students learn CFT, HSAB and applications of coordinationcompounds and bioinorganic chemistry.

CO-2: In organic chemistry carbohydrates, amino acids, proteins and heterocyclic compoundsknowledge is obtained.

CO-3: In Physical chemistry knowledge is obtained about photochemical laws, applications.

CO-4: In General chemistry theories of bonding in metals, Carbane ion -II, colloids and surfacechemistry and its applications.

Chemistry-V

CO-1: The students to able gain the subject of coordination compounds and its applications.

CO-2: Boranes and Carboranes properties and applications.

CO-3: In organic chemistry amines, cyanides and isocyanides, heterocyclic compounds properties and its applications study.

CO-4: In Physical chemistry chemical kinetics, its laws and various applications are studied.

CO-5: Molecular spectroscopy techniques and Photochemistry tools handling, resultsobservation and analysis is learnt by the students.

Chemistry-VI

CO-1: Students able to gain the knowledge about Chromatography techniques andmethodology.

CO-2: To know about applications of various chromatographic techniques.

CO-3: Understand the Colorimetry, Spectro photometry, IR spectrophotometer and othertechniques

CO-4: In inorganic chemistry inorganic reaction mechanism, bio inorganic chemistry, HSAB analysis learnt by the students.

CO-5: In organic chemistry carbohydrates, amino acids and proteins awareness is obtained.

CO-6: In thermodynamics the laws and applications awareness is created among the students.

CO-7: In general chemistry students able to learn Mass spectrometry and entropy.

CO-8: To acquire knowledge of introduction and basic concepts of medicinal chemistry.

CO-9: To know about enzymes properties, mechanism of action and types of inhibition.

CO-10: Importance of drugs, its synthesis, mechanism of action and applications in treatment of diseases CO-11: To know about molecular messengers and health promoting drugs and vitamins.

T.T.W.R.D.C (GIRLS) - KOTHAGUDEM

DEPARTMENT OF CHEMISTRY

ANNUAL ACTION PLAN 2021-2022 (II, IV &VI SEM)

Sl No.	Month and Year	Sem/Paper	Curricular	CO- Curricular	Extra Curricular
1	March	PAPER VI	Introduction and Terminology Diseases, Drug.	Slip test	International women's day
		PAPER IV	Co-ordination compounds-II	Assignment	Swatch Bharat
		PAPER II	P-Block elements, Inter halogens, and Zero group elements	Slip test	Swatch Bharat
2	April	PAPER VI	Classification, Nomenclatur eADMET Explanation.	Stu den t Se min ar	Dr B R Ambedkar's birth day
		PAPER IV	Hard and Soft acid bases, Bio Inorganic Chemistry	Assignment	Field Visit
		PAPER II	Halogen compounds, Hydroxy compounds and Cabonyl compounds.	Slip test	Field Visit
3	May	PAPER VI	Enzymes and Receptors	Internal Exam I	International labour's day
		PAPER IV	Carbohydrates, Amino acids and proteins, Hetero cyclic	Internal Exam I	Field Visit

			compounds		
		PAPER II	Electro Chemistry	Students Study Project	Swacha bharath
	June	PAPER VI	Synthesis and Therapeutic activity of Drugs		

CRITERIA-I CURRICULAR ASPECTS

- We follow the syllabus framed by the Kakatiya University, Warangal. From the academic year 2017-18 Choice based Credit System (CBCS) has been introduced in the curriculum by university. As per the almanac of the university every semester has 15 weeks of instruction period and 60 to 90 instruction hours per semester including 30 hours of practical classes. A revised CBCS syllabus has been implemented from 2019-20 academic year and we follow the same.
- At the beginning of even and odd semester's departmental semester plan is prepared by the department and individual semester plans are prepared by the faculty members. Apart from the regular curriculum department of chemistry organized awareness programmes on the importance of protecting environment. As part of green initiative and beautification of the campus, the department of chemistry has been actively involved in making of detergent powder.

TIMETABLES

III MZC, III BZC 2023-24

DAY	I	II	III	IV	V	VI	VII
MON	III BZC	IIIBZC					
TUE	III MZC	III BZC					
WED			III MZC	III MZC			III MZC
THU	III MZC	III BZC				III BZC	
FRI	III BZC	III MZC				III BZC	III MZC
SAT	III BZC	III MZC					

I BZC, I MZC 2023-24

DAY	I	II	III	IV	V	VI	VII
MON	I BZC		I MZC		II BZC/ MZC		
TUE					I MZC	I BZC	I MZC
WED	I MZC	I MZC		I MZC	I BZC	I MZC	II BZC (NC)
THU			I BZC	I MZC	II BZC/ MZC		
FRI	I BZC			I MZC			I BZC
SAT	I BZC	I BZC				II MZC(NC)	

II BZC, II MZC 2023-24

DAY	I	II	III	IV	V	VI	VII
MON		II BZC		II MZC		II MZC	
TUE	II BZC	II BZC	II MZC			II BZC	
WED	II BZC		II MZC		IIMPCS	II MZC	IIMPCS
THU	II BZC		II MZC			II BZC	
FRI		II BZC			IIMPCS		
SAT	II MZC	II MZC			II BZC		

III MZC, III BZC 2024-25

DAY	I	II	III	IV	V	VI	VII
MON	III MZC	III BZC					
TUE	III BZC	III MZC					
WED	III BZC	III BZC					
THU	III MZC	III BZC					
FRI	III MZC	III BZC					
SAT	III MZC	III MZC					

II MZC, II BZC 2024-25

DAY	I	II	III	IV	V	VI	VII
MON		II MZC			II BZC		
TUE				I BZC	II BZC		
WED	II BZC	II BZC	II MZC				
THU	II BZC	II MZC					
FRI	II MZC	II MZC		II MZC	II BZC		
SAT		I BZC		II MZC			

I BZC, I MZC 2024-25

DAY					V	VI	VII
MON	I BZC	I BZC		I MPCS	I MZC		
TUE	I MZC	I MZC	I BZC				
WED	I BZC		I MZC				
THU	I MZC			I BZC	I MPCS		
FRI			I BZC	I MZC			
SAT			I MZC	I BZC			

FACULTY WISE WORK LOAD

S.NO	Name of the Faculty	Theory Hours	Practical Hours	TOTAL
1	Dr. S. Nageswara Rao	16	04	20
Grand Total Hours per week				20
S.NO	**Name of the Faculty**	**Theory Hours**	**Practical Hours**	**TOTAL**
2	G. Tejaswini	16	04	20
Grand Total Hours per week				20
S.NO	**Name of the Faculty**	**Theory Hours**	**Practical Hours**	**TOTAL**
3	S. Madhavi	16	06	22
Grand Total Hours per week				22

Criteria-II:

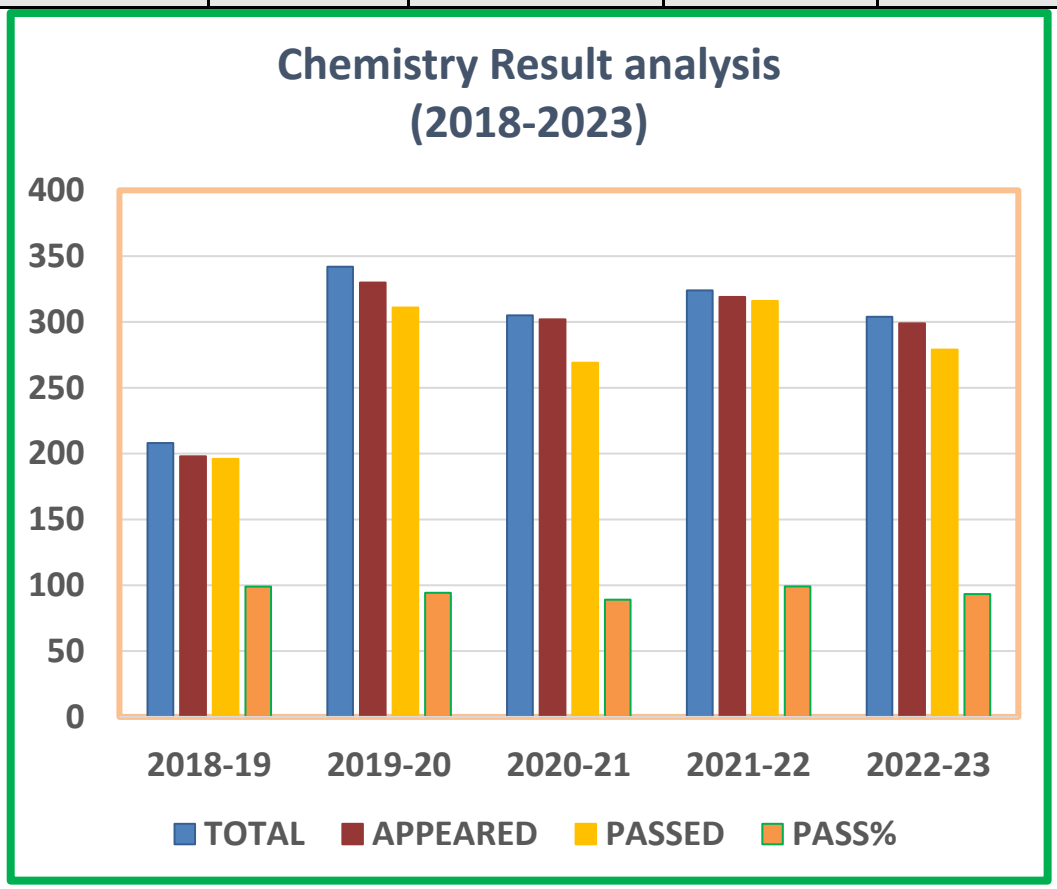
TEACHING, LEARNING & EVALUATION

Student strength particulars

Academic year	Course	Intake	Enrolled	% of Enrollment
2018-19	BZC	40	23	57.5
	MBZC	40	16	40
	MPC	40	21	52.5
2019-20	BZC	40	37	92.5
	MBZC	40	36	90
2020-21	BZC	40	29	72.5
	MBZC	40	27	67.5
2021-2022	BZC	40	26	65
	MBZC	40	24	60
2022-2023	BZC	40	26	65
	MBZC	40	26	65

Result Analysis

ACADEMIC YEAR	TOTAL	APPEARD	PASSED	PASS%
2018-19	208	198	196	99
2019-20	342	330	311	94.3
2020-21	305	302	269	89.1
2021-22	324	319	316	99.1
2022-23	304	299	279	93.3



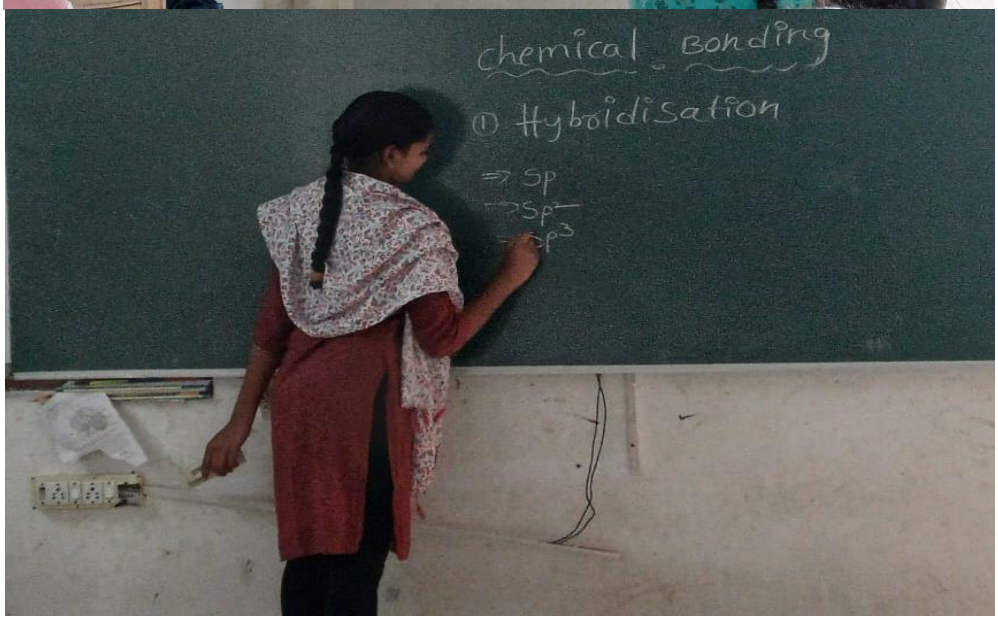
Number of Teaching Posts Sanctioned

NAME OF THE LECTURER	Qualification	Designation	Specialization	Exp.in years
Kum. G. Tejaswini	M.Sc. CSIR-JRF	Degree Lecturer	-------	04 Months
Smt. S. Madhavi	M.Sc., B.Ed, CSIR-NET	Degree Lecturer	--------	16 Years
Dr. S. N. Rao	M.Sc. CSIR-JRF, Ph. D	Guest Degree Lecturer	--------	02 Years

STUDENT SEMINARS

S.NO	YEAR	NAME OF THE TOPIC	NAME OF THE STUDENT
1	2017-18	Electronic Transitions	B.Saipriya
2	2017-18	Paper Chromatography	B.Sravanthi
3	2018-19	First Law of Thermodynamics	B.Saipriya
4	2018-19	Werner's Theory & VSEPR Theory	B.Maheswari
5	2018-2019	Phase Rule	B.Laxmiprasanna
6	2018-2019	Chromophore & Auxochrome	E.lahari
7	2019-2020	MOED of N_2	G.Lahari
8	2019-2020	Enantiomers	Usha rani

9	2020-2021	Solvent Extraction	B.Padmavathi
10	2020-2021	Metal Carbonyls	G.Himabindu
11	2020-2021	S_N^1 & S_N^2	S.Sowjanya
12	2021-2022	ESR in Benzene	B.Mounika
13	2021-2022	Amines Separation	P.Annamma
14	2021-2022	HPLC	A.Girija
15	2022-2023	Raoult's Law	A. Triveni
16	2022-2023	Order and Molecularity	A.Kumari
17	2022-2023	Mass Spectroscopy	T. Kalyani



Quiz and Group Discussion Programs

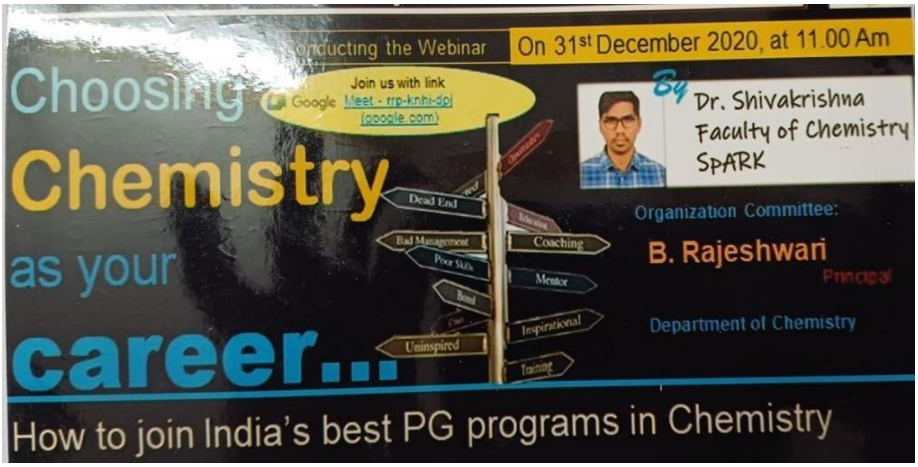

Group-A
Group-B


Quiz
Group-A
Group-B


Classroom Seminar.
Topic- Aldol condensation.
Aldol

S.no	year	DATE	NAME	DESIGNATION / NAME OF THE COLLEGE	TOPIC NAME
1	2018-19	22/08/2018	Sri. Anilkumar	Motivational speaker	Inspiration motivational words
2	2019-2020	16/09/2019	G. Revathi R. Thirupathamma	Lecurerer	World Ozone Day
3	2020-21	31/12/2021	Dr. Shivakrishna	Asst.professor, TTWRDC Boath	Advantages of Chemistry
4	2020-21	01/04/2021	G. Neeraja Sinha	Degree Lecturer in Chemistry, Mahabubabad.	Electro Chemistry and Prospects in the field of Research
5.	2020-21	11/12/2021	Dr. Ramu Guda	GDC Bhadrachalam	NMR and Mass Spectroscopy
6.	2021-22	11/01/2022	Dr. Veeranna	GDC Bhadrachalam	NMR Spectroscopy
7.	2022-23	23/03/2023	Dr. Kishore Mullagiri	KLR, Pharmacy, Paloncha	CO-Ordination Compounds
8.	2023-24	19/06/2023	Prof. Rajgopal Subramanyam	Asst. Prof. University of Hyderabad	An Insight on Life Sciences and Physical Sciences Research Institutions and Funding Agencies
9.	2024-25	23/09/2024	Dr. B. Chandramouli	Retd. Prof. SR & BGNR, Khammam	Molecular Spectroscopy
10.	2024-25	21/10/2024	Dr. G. Madhavi	Asst. Prof. GDC, Paloncha	Depletion of Ozone


Invitation for webinar
Time 11:00 Am
To
12:00 Noon
16 September world ozone day
Date:16th september
Presenters:
G.chandrakala (IIIBzc)
S.Deepthi (IIIBzc)
J.Satyavani (IIIBzc)
P.Dharani (IIIMzc)
Vice Principal
P.Anuradha
Principal
B.Rajeswari


On 31st December 2020, at 11.00 Am
Join us with link
Meet - rrp-knhi-dpj (google.com)
By
Dr. Shivakrishna
Faculty of Chemistry
SPARK
Choosing
Chemistry
as your
career...
Organization Committee:
B. Rajeshwari
Principal
Department of Chemistry
How to join India's best PG programs in Chemistry


Electrochemistry and prospects in the field of Research
Speaker:
On:01/04/ 2021
Time:
11:00 to12:00
G.Neeraja Sinha
Integrated Masters. Ph.D
DL.in Chemistry
Co.Convenor
P.Anuradha
vice - principal
Convenor
B.Rajeshwari
Organizers
Principal
Ttwrdc
kothagudem
R.Thirupathamma
G.Revathi
Dept.of Chemistry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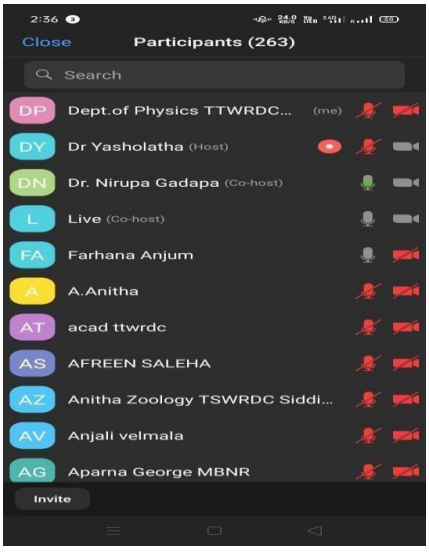
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DN Dr. Nirupa Gadapa (Co-host)
L Live (Co-host)
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A A.Anitha
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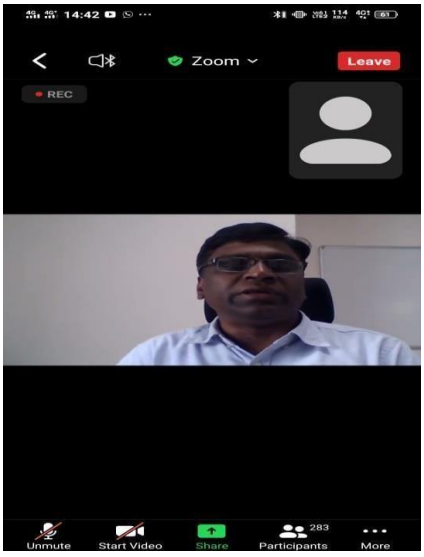
AS AFREEN SALEHA
AZ Anitha Zoology TSWRDC Siddi...
AV Anjali velmala
AG Aparna George MBNR
Invite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EXTENSION LECTURE
MOLECULAR


EXTENSION LECTURE

FIELD VISITS

S.NO	Visited Place	Date	No. of Students Participated	No. of faculty Attended
1	Kinnerasani	05.01.2019	31	01
2	Kothaguderm Thermal Power Station	02.02.2020	37	01
3	Central park ornamental plants	07.01.2021	26	01
4	Vermicompost Visit	16.11.2023	25	05
5	Singareni Coal Mine	06.04.2023	40	04
6	Government Degree College Paloncha	20.09.2024	40	02


KOTHAGUDEM THERMAL POWER STATION STAGE - VI (1X500MW) - AT UNIT ADMINISTRATIVE BUILDING


KINNERASANI PROJECT KTPS-VI


THE SINGARENI COLLIERIES CO LTD
(A GOVERNMENT COMPANY)


ప్రభుత్వ డిగ్రీ కళాశాల - పాల్వంచ
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Google

STUDENT STUDYP ROJECTS

Student Study Projects in TTWRDC KOTHAGUDEM College owing to the positive response from students and teaching faculty, to improve research knowledge.

Sl. No	Date/Year	Name of the Supervisor	Title of the Project	No. of Students Involved	Remarks
1	2018-19	Smt.G. Revathi	A brief information about Vitamins	4	
2	2018-19	Smt.G. Revathi	Medicinal Drugs	4	
3	2018-19	Smt.R. Thirupathamma	Chemistry of Alcohols and Phenols	4	
4	2019-20	Smt.R. Thirupathamma	Potentiometric Titrations	4	
5	2019-20	Smt.G. Revathi	Hybridisation	4	
6	2019-20	Smt.G. Revathi	Group IV Elements	4	
7	2020-21	Smt.R. Thirupathamma	Symmetry of Molecules	4	
8	2020-21	Smt.G. Revathi	Chemistry of Alkenes	4	
9	2020-21	Smt.R. Thirupathamma	Lanthanide Contraction	4	
10	2021-22	Smt.G. Revathi	Chemistry of Carbohydrates	4	
11	2021-22	Smt.R. Thirupathamma	Distillation of Water	5	

12	2021-22	Smt.G. Revathi	Chemistry of Alkaloids (Papavarine)	4	
13	2022-23	S. Nageswara Rao	Chemistry of Carbonyl Compounds	5	
14	2022-23	M. Meena	d-Block Elements	4	
15	2022-23	S. Nageswara Rao	Heterocyclic Compounds	4	

CRITERIA-III

INNOVATION&EXTENSION ACTIVITIES

Department of chemistry conducted many plantation programs in the campus conducted awareness programs for spreading of eco-friendly practices.

CRITERIA- IV

INFRASTRUCTURE & LEARNING RESOURCES

4.1 Physical Facilities:

- Spacious Class Rooms
- Computer Lab
- Digital Class Room
- Chemistry Lab

4.3 IT Infrastructure:

- Internet Facility
- MANA TV

4.2 Library as a Learning Resource	4.4 Maintenance of Campus Facilities
➢ Departmental Library	➢ CC Camera and Surveillance ➢ Purified Drinking Water Facility ➢ Swachh Bharath ➢ Greenery:

DEPARTMENTAL LIBRARY

1	**Reference Books**	**20**
2	**Text books**	**60**
3	**PG BOOKS**	**30**
4	**TOTAL**	**110**

FURNITURE AND EQUIPMENRTS

S.NO	NAME OF THE EQUIPMENT/ FURNITURE	NO. OF ITEMS
1	MONITOR	01
2	CPU	01
3	PRINTER	01
4	KEY BOARD & MOUSE	01
5	"S" TYPE CHAIRS	05
6	TABLES	05
7	IRON ALMARA	03

CHEMISTRY LAB

Chemistry Lab is a place where 'practical chemistry' is taught-learnt. This mainly focuses on chemistry practical trade and analysis of salts and identification of different organic functional groups. Chemistry professionals always have a good demand in the world as excellent professors, research experts and Nobel laureates etc. Here, students practice what they have learnt in classroom. Subject-wise training is made in Chemistry Lab. Assignments are given to students to meet the entrepreneurs, visit corporates, registered bodies etc., and to make a brief report about their learning experience. For chemistry, they are asked to prepare and maintain the books of chemistry. For taxation, students fill registration forms and file returns virtually. This is how students gain practical knowledge and make themselves either employment ready or take up a new start.

Objectives are:

- **To give a platform to students to practice the theoretical concepts learnt in classroom.**

- **To make students easily learn apply concepts in daily practice.**

- **To develop basic chemistry and improve competitive skills.**

- **To develop entrepreneurial and professional abilities.**

Infrastructure and Learning Resources

COMPUTER SYSTEM

DIGITAL CLASS ROOM

DEPARTMENTAL LIBRARY


TTWRDC (W), KOTHAGUDEM
DEPARTMENT OF CHEMISTRY
NATIONAL SCIENCE DAY
TTWREI SOCIETY, WEEKLY REVISED MENU - 2023
DAY
BREAK FAST
LUNCH
SNACKS
SUPPER
MONDAY
TUESDAY

CRITERIA–V

STUDENT SUPPORTIVE AND PROGRESSION

Achievements

Number of students progressing to higher education during the year				
Year	Name of student enrolling into higher education	Program graduated from	UNVERSITY/INSTITUTION	Name of programme admitted to
2021-22	J. Sathya vani	B.Sc (B. ZC)	TELANGANA UNIVERSITY	M.Sc
2020-21	M. Divya	B.Sc (B. ZC)	SATAVAHANA UNIVERSITY	M.Sc
2022-23	V. Bharathi	B.Sc (M. ZC)	KAKATITYA UNIVERSITY	M.Sc
2021-22	S. Sowjanya	B.Sc (B. ZC)	SATAVAHANA UNIVERSITY	M.Sc
2023-24	D. Hannibhai	B.Sc (B. ZC)	KAKATITYA UNIVERSITY	M.Sc
	A. Gouthami	B.Sc (B. ZC)	OSMANIA UNIVERSITY	M.Sc

COORDINATOR/MEMBER OF VARIOUS COMMITEES

Every faculty member is member of at least one committee. He/she does fulfil the work assigned by the coordinator of the committee. It is important to mention here that, Department faculty member Dr. S. N. Rao Research Cell (member), Water & Electricity coordinator S. Madhavi (Member). Following table depicts responsibilities taken up by Department faculty members.

S.NO	ACADEMIC YEAR	NAME OF THE FACULTY	CO-ORDINATOR	COMMITTEES MEMBER
1	2017-18	V. Renuka	-----	Bridge course
2	2018-24	G. Revathi	------	Clean & Green (Co-Ordinator)
3	2018-22	R. Thirupathamma	------	Uniform Committee
4	2023-24	Dr. S. N. Rao	Research cell	Publicity
5	2023-24	M. Meena	------	Out Reach Club
6	2024-25	G. Tejaswini	Clean & Green (Co-Ordinator)	Time Table Committee
7	2024-25	S. Madhavi	Water & Electricity	Mess Committee

CRITERIA- VII

INSTITUTIONAL VALUES AND BEST PRACTICES

TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE (GIRLS),KOTHAGUDM

Bhadradri Kothagudem District, Telangana State–507101

(Affiliated to Kakatiya University, Warangal, Telangana).

DEPARTMENT OF CHEMISTRY

Name of the Activity: Making of Detergent Powder

Introduction:

Synthetic detergents are playing vital role in the present era, particularly when the modern society is majorly looking for quick, efficient and economic cleaning agents. The development of synthetic industry is directly linked with Petro-chemical industry which forms the basic for its raw materials. Generally detergents are soluble in water, Detergents when dissolved in water obtain better cleaning properties and hence facilitate easy removal of dirt & dust and grease etc. Apart from their use in clothes washing, detergents also have applications in the following industries.

- In industry, in laundry and dry cleaning.
- In textile processing, grain milling, metal plating and foods canning.
- In dairy foods and beverages processing and in restaurants.
- In plant maintenance and industrial house-keeping.

Major Application of Detergents

Synthetic detergents are favored to soaps on account of economy and efficiency. Unlike soaps synthetic detergents remain unaffected by the presence of natural lime and magnesium salts in water and maintain cleaning properties in hard water with no wastage. So these synthetic detergents are more economical. Synthetic reagents available in the market are used for washing cloth cotton and other fabrics. Moreover, liquid detergents are also sold for the purpose of dish washing of dishes and floor cleaning industrial use in textiles, and buildings, hospitals, and hotels, similarly railway coaches, road vehicles, aircrafts and food preservations are washed with the help of synthetic detergents. Textile industry is one of the biggest consumers of synthetic detergents. In the processing stage the cotton, rayon and synthetic fibers are scoured wetted with chemical detergents. They are used as dyeing and finishing operations and also in the printing trade in woolen textile industry. Detergents are used in the scouring operations of raw material, yarn and natural fiber fabrics. In paper industry detergents are used as wetting agents to facilitate the pulp making operations. And also detergents are used in degreasing of rags, in pretreatment in the electroplating and galvanizing process, for wetting of ores, and mineral extraction. In scouring of leather, detergents are employed to impart softening and penetrating properties to the leathers. In rubber industry, detergents are used as wetting and dispersing agents and as lubricants. These are regularly used for cleaning tools, packing containers employed in the food processing industry, in brewing and wine making industry.

Detergent Powder Making Formula:

Although there are three ways of manufacturing dry detergent, only two are commonly used today. In the blender process favored by smaller companies, the ingredients are mixed in large vats before being packaged. The second commonly used method of production is called the agglomeration process. Unlike the blender process, it is continuous, which makes it the choice of very large detergent manufacturers. In the third method, dry ingredients are blended in water before being dried with hot air. Although the resulting product is of high quality, the fuel costs and engineering problems associated with venting, reheating, and reusing the air have led to this method being largely replaced by agglomeration.

A workshop on manufacture of detergent powder was conducted on 10.02.2023 for final year students of BZC and MBZC, 40 students were trained in the process of preparation of detergent powder in safe and hazard free conditions. The main idea behind this workshop is to provide them with training in the preparation, packing and marketing of household detergent powder in a small scale so that they become a small-scale entrepreneur after completion of their under graduate studies. If they are successful in the process, the same may be expanded into a small-scale unit with support and cooperation from government or self-finance. A detergent is a substance or a mixture containing soaps and surfactants used for washing and cleaning processes.

INGREDIENTS REQUIRED: (For approximately 3 kg product)

1. Soda (Sodium Carbonate) 1kg
2. Acid Slurry LABSA (OLEUM) 500G
3. TSP (Trisodium phosphate) 350g
4. STPP (Sodium Tri Poly Phosphate)
5. Glauber's Salt (Sodium Sulphate) 500g
6. SMS (Sodium Meta Silicate) 250g
7. Caustic Soda (LYE) 50g
8. SLS (Sodium Lauryl Sulphate) 125g
9. Sodium Carboxy Methyl Cellulose 50g
10. Scent 5ml
11. Tinopal 12g
12. Coloured Balls 50g

Washing soda: is used in detergent, to clean especially in hard water, and as a laundryadditive to soften water.

Acid slurry: is a sulphonation product made by sulphonation of linear alkyl benzene by oleum giving Linear Alkyl Benzene Sulphonic Acid (LABSA) (Soft Acid Slurry) which is themain Raw Material in the formulation of Washing Powder.

Trisodium phosphate (TSP): is a white, granular or crystalline solid, highly soluble in water, producing an alkaline solution. TSP is used as a cleaning agent, that helps to loosen dirtand grime.

Sodium Tri Poly Phosphate (STPP): in detergents acts as a water softener. In hard water (water having high concentrations of Mg^{2+} and Ca^{2+}), detergents are deactivated. Being ahighly charged chelating agent, STPP prevents them from interfering with the detergent.

Sodium Sulphate (Glauber's Salt): is used as a filler in detergent, in powder form toincrease the quantity of detergent powder.

Sodium Meta Silicate (SMS): is a colorless crystalline hygroscopic and deliquescent solid, soluble in water and is used as a bleaching aid and to enhance the cleaning efficiency ofthe surfactant in soaps and detergents.

Caustic Soda (**NaOH**): is used as a cleansing agent

Sodium Lauryl Sulfate (SLS): is an additive used to increase lather and foam. SLS acts asa surfactant, wetting surfaces, emulsifying or solubilizing oils, and suspending soil so that they can be rinsed away. This ingredient contributes foaming properties to detergent.

Sodium Carboxy Methyl Cellulose (SCMC): is used in detergents as an anti-soil redeposition agent, particle suspender, skin protector, color retention agent, stabilizer, homogenizer and texture protector.

Tinopal: Gives high level of whiteness and brightness, improves the cleaning efficiency in laundry process, prevents greening after multiple washing cycles, improves whiteness of power detergent.

PROCESS OF MANUFACTURE:

- Acid slurry is first neutralized with soda ash and mixture is kept for one hour for completion of reaction.
- Other ingredients such as STPP, TSP, Glauber's salt, SCMC, Colors, Scent etc. are then blended to the neutralized acid slurry with continuous mixing.
- The mixture is then dried, and packed in suitable packings.

- Students from each of Final B. Sc classes namely BZC, MBC, were involved in the process of making the washing powder and explained the process. This would make themmanufacture it in their respective villages and earn a considerable income.

APPROXIMATE COST OF RAW MATERIALS:

S.No	Raw Material	Cost/kg
1	Soda (Sodium Carbonate)	25/kg
2	Acid Slurry LABSA (OLEUM)	104/kg
3	TSP(Trisodium phosphate)	40/kg
4	STPP (Sodium Tri Poly Phosphate)	55/kg
5	Glauber's Salt (Sodium Sulphate)	18/kg
6	SMS (Sodium Meta Silicate)	23/kg
7	Caustic Soda (LYE)	90/kg
8	SLS (Sodium Lauryl Sulphate)	250/kg
9	Sodium Carboxy Methyl Cellulose	60/kg
10	Scent	90/10ml
11	Tinopal	125/kg
12	Coloured Balls	100/kg
13	Packing Jars(500ml) 90 Nos	145.00
14	Printing of Stickers (100 Nos)	400.00
15	Buckets for mixing	450.00

The estimated cost of raw material required for preparing 12kg of detergent wasRs 2500/-.

The approximate yield is 12.0 kgs.

The revenue generated while selling the 12 kg detergent @ Rs130/kg is Rs 1560/-.Net profit for 12 kg's is Rs 940/-.

Students preparing Detergent Powder

Students preparing Detergent Powder


Thank
You