

Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya, Wai
Department of Chemistry
Number of Students undertaking Project work 2022-23
B.Sc. III
Core Course Practical in Chemistry- VI

Sr. No.	Roll. No.	Name of Student	Name of Project	Sign
1	1	KOCHALE PRITI DAGADU	Estimation of P from mixed fertilizer	<u>P. Kochale</u>
2	3	DHUMAL AKASH SURYAKANT	Silver mirror test using Tollens reagent.	<u>Dr. Dhumbale</u>
3	4	PISAL YASH JITENDRA	Preparation of Paint Pigments	<u>Y. Pisal</u>
4	5	PAWAR TEJAS BHANUDAS	Silver mirror test using Tollens's reagent	<u>T. Pawar</u>
5	6	SHAHISTA HASAN BAGWAN	Preparation of paint pigments	<u>Shahista</u>
6	7	PISAL PRACHI UTTAMRAO	Preparation of Paint Pigments	<u>P. Pisal</u>
7	8	BHOSALE SMITA ANIL	Preparation of Paint Pigments	<u>S. Bhosale</u>
8	9	DAHOTRE SHREYA PRAVIN	Preparation of Paint Pigments -	<u>Shreyas</u>
9	10	YADAV RUTUJA SHRAVAN	Estimation of P from mixed fertilizer	<u>R. S. Yadav</u>
10	11	SASANE RUCHA UMESH	Estimation of P from mixed fertilizer	<u>R. Sasane</u>
11	12	GAIKWAD SHREYASH PRADIP	Estimation of P from mixed fertilizer	<u>Shreyas</u>
12	13	SANAS ABHISHEK RAJKUMAR	Estimation of P from mixed fertilizer	<u>A. Sanas</u>
13	14	PUJARI KIRTI CHENNA	Vegetable juice Analysis	<u>K. Pujari</u>
14	15	WAKLE PRATIKSHA PRASAD	Vegetable juice Analysis	<u>P. Wakle</u>
15	16	DHEBE ROHIT JAYWANT	Vegetable juice Analysis	<u>R. Dhebe</u>
16	17	AKHADE OMKAR GANPAT.	Synthesis of silver nanoparticle	<u>O. G. Akhade</u>

17	18	SHIVTHARE SONAM SAMBHAJI	Synthesis of silver nanoparticle.	<u>S.S. Sambhaji</u>
18	19	GOLE NIKITA DATTATRAY	synthesis of silver nanoparticle	<u>N.D. Gole</u>
19	20	MANDHARE SHIVANI RAMESH	synthesis of silver nanoparticle	<u>S.R. Mane</u>
20	21	SHINDE DIPTI DIGAMBAR	Synthesis of silver nanoparticle	<u>P.P. Shinde</u>
21	22	DHUMAL SUMIT MAHESH	Silver mirror test using Tollen's reagent	<u>Sumit</u>
22	23	SOLASKAR ADITYA MADHUKAR	Silver mirror test using Tollen's reagent	<u>Aditya</u>
23	24	DHUMAL ABHISHEK NANDKUMAR	Silver mirror test using Tollen's reagent	<u>Abhishek</u>
24	25	YADAV SANKET DHANSING	Silver mirror test using Tollen's reagent	<u>S. D. Yadav</u>
25	26	WAGHAMBARE ADARSH RAMESH	synthesis of silver nanoparticle	<u>A.R. Waghmare</u>
26	27	SHIVTARE PRAFULLA SANJAY	Silver mirror test using Tollen's reagent	<u>Prabhakar</u>
27	28	PHARANDE ANIKET DEEPAK	Synthesis of silver nanoparticle	<u>A.P. Pharande</u>
28	30	KAMBLE SHUBHAM MADAN	Silver mirror test using Tollen's reagent	<u>Shubham</u>
29	31	KHARAT SUYOG BAPURAO	synthesis of silver nanoparticle	<u>S.B. Kharat</u>
30	32	KHARAT PRATHAMESH RAMCHANDRA	Synthesis of silver nanoparticle	<u>Prathamesh</u>
31	34	PURI SOHAN VISHWANATH	Aldol Condensation of Acetophenone & 3-nitrobenzene	<u>S.V. Puri</u>
32	35	WAGHMARE VISHAL PRAKASH	Aldol Condensation of Acetophenone & 3-nitrobenzene	<u>Vishal</u>
33	36	KUMBHAR ABHIJIT SHANKAR	Preparation of phenytoin	<u>Abhishek</u>
34	37	HONKALASAKAR NIKHIL SANJAY	Preparation of phenytoin	<u>Nikhil</u>
35	38	TIKE SAHIL SHANTARAM.	Preparation of phenytoin	<u>Sahil</u>
36	39	GURAV DIPAK KISAN	Preparation of phenytoin	<u>Dipak</u>

37	40	TARATE ABHIJIT SHIVAJI	Preparation of phenytoin	A.S. Tarate
38	41	JADHAV YASH DAGADU	Preparation of phenytoin	Y.D. Jadhav
39	42	VAIRAT DATTA HARIDAS		
40	43	SUTAR NEHA NANDU	Aldol Condensation of Acetophenone & 3-nitrobenzaldehyde	Sleha
41	45	BORATE ONKAR RAMDAS	Aldol Condensation of Acetophenone & 3-nitrobenzaldehyde	Onkar
42	46	GURAV MRUGENDRA TANAJI	Aldol Condensation of Acetophenone & 3-nitrobenzaldehyde	M.T. Gurav
43	47	GIMVEKAR AJAY ANKUSH	Aldol Condensation of Acetophenone & 3-nitrobenzaldehyde	
44	48	JAMDADE PRAJWAL VILAS	Aldol Condensation of Acetophenone & 3-nitrobenzaldehyde	Mundak
45	49	LAKHE HARSHADA SANTOSH		
46	50	SHEDAGE AMAN PRADIP	Measuring amount of acetic acid in different vinegar.	Shedage
47	59	VAIRAT VISHAL BHIMRAO		
48	60	ERANDE VIKRAM DILIP	Measuring amount of acetic acid in different vinegar	Vikram
49	63	WAGH OMKAR SHIVAJI	Synthesis of Phenytoin	O.S. Wagh
50	64	KARNE PAYAL NANDKUMAR	Measuring amount of acetic acid in different vinegar	Payal
51	67	SHELAR PRATHAMESH DATTATRAY	Analysis of Honey	Shelar
52	68	SHWETA SHATRUGHNA MANDHARE	Analysis of Honey	Shweta
53	70	GADHAVE SHIVANJALI RAJENDRA	Synthesis of Phenytoin	S.R. Gadhave
54	71	SATPUTE SAYALI ANANDA	Synthesis of Phenytoin	S.A. Satpute
55	72	MISAL MEGHA NAVNIT	Synthesis of Phenytoin	M.N. Misal
56	73	RANJANE SHRUTIKA SUBHASH	Synthesis of Phenytoin	Ranjane

57	74	KUMBHAR MAYUR JITENDRA	Measuring amount of acetic acid in different vinegar	<u>Mumbhar</u>
58	83	MOHITE AKANKSHA MAHADEV	Analysis of Honey.	<u>AM</u>
59	84	KHANDAGALE PRATIKSHA DILIP	Analysis of Honey	<u>K</u>
60	85	SAWANT AKANKSHA SANJAY	Sub Analysis of Honey	<u>Sawant</u>
61	86	SHINDE SHIVAM MEGHARAJ	Preparation of pigment & poster paints	<u>Shinde</u>
62	90	BANDGAR KIRAN SHANTARAM	preparation of pigment & poster paint	<u>B</u>
63	92	INGALE SONALI PRAKASH	Preparation of pigment & poster paints	<u>ingale</u>
64	94	BADADARE GAURAV RAJENDRA	Preparation of pigment and poster paints	<u>GRBalk</u>
65	98	CHAUDHARI RAHUL SURESH	Chocolate analysis	<u>R.S. Chaudhari</u>
66	104	MAHANGADE PRATIK BALKRISHNA	Food Adulteration	<u>Pratik</u>
67	105	BHANDIRGE DHANSHREE RAJENDRA	Food Adulteration	<u>Dhanshree</u>
68	106	SHINDE JAYESH VIJAY	Chocolate analysis	<u>Shinde</u>
69	107	SHINDE SHIVDAS HEMANT	Food Adulteration	<u>S.H. Shinde</u>
70	108	NIKAM KAJAL VIKAS	Food Adulteration	<u>K.V. Nikam</u>
71	109	KARPE TEJASHRI SATYWAN	Food adulteration	<u>Tej</u>
72	110	SALUNKHE SUSHANT SANTAJI	Food Adulteration	<u>S</u>
73	111	NIKAM SAURABH RAMDAS	Poster Paints -	<u>S.R. Nikam</u>
74	112	BHOSALE ROSHAN RAVINDRA	poster preparation of pigment of poster point	<u>R. Bhosale</u>
75	113	BHOITE PRAJWAL DEVIDAS	chocolate analysis	<u>P.D. Bhoite</u>
76	114	SHINGATE NIKITA RAMDAS	Acidity in various sample of milk	<u>Nikita</u>

77	115	PANSE ASHUTOSH VINOD	Analysis of everyday product	<u>Pall</u> .
78	116	SANKPAL RUTUJA NARAYAN	Sugarcane Juice	<u>Sankpal</u> .
79	117	BHILARE AADITYA VIJAY	sugarcane Juice	<u>Bhilare</u> .
80	118	SALUNKHE SAURABH HEMANT	Analysis of everyday product	<u>S. S. Shevale</u> .
81	119	SHEVALE VINAY UMESH	Analysis of everyday product	<u>S. Shevale</u> .
82	120	MANDHARE SHUBHAM DATTATRAY	Sugarcane Juice	
83	136	JADHAV VAISHNAVI ABHIJIT	Sugarcane Juice	<u>Jadhav</u> .
84	137	RAJPURE YASH VIJAY	sugarcane Juice	<u>Rajpure</u> .
85	138	PATIL SARVESH SARJERAO	Analysis of everyday product	<u>S. S. Patil</u> .
86	139	KUMBHAR MANGESH KRISHNARAO	Analysis of everyday product	<u>M. K. Kumbhar</u> .
87	140	TARATE MAYUR SANJAY	Preparation of phenytoin	<u>M. S. Tarate</u> .
88	141	SALUNKHE ATHARV SANJAY	Acidity in various sample of milk.	<u>S. Salunkhe</u> .
89	142	MOHITE ANIKET DILIP	Acidity in various sample of milk.	<u>Mohite</u> .
90	143	LEMBHE RAJAT JAYAWANT	Acidity in various sample of milk.	<u>Lembhe</u> .
91	144	GHORPADE SHRIKANT SHANTARAM	Estimation of nitrogen analysis	<u>S. S. Ghorpade</u> .
92	145	DHUMAL PRANIL PRAMOD	Estimation of Aspirin.	<u>Dhumal</u> .
93	146	JAGTAP SIDDESH AJIT	Estimation of nitrogen analysis	<u>Jagtap</u> .
94	147	GAIKWAD NIKITA SANJAY	Estimation of Aspirin	<u>Gaikwad</u> .
95	148	JAGTAP PRATHAMESH SATISH	Estimation of Aspirin	<u>Jagtap</u> .
96	149	SHINDE RUTUJA GULABSING	Estimation of Aspirin	<u>Shinde</u> .

97	150	DHUMAL SANKET RAMCHANDRA	Estimation of Aspirin	<u>Dhumal</u>
98	151	JADHAV DIVYA NITIN	Soil Analysis	<u>Jadhav</u>
99	152	SHINDE SAKSHI SANTOSH	Soil Analysis	<u>Shinde</u>
100	153	SAWANT RUSHIKESH RAJENDRA	<u>AB</u>	
101	154	KAKADE SANGRAM DATTATRAY	Estimation of nitrogen analysis	<u>Kakade</u>
102	155	JADHAV UTTARA VILAS	Soil analysis	<u>Jadhav</u>
103	156	CHIKANE RIDDHI RAMESH	Soil Analysis	<u>Chikane</u>
104	157	CHIKANE SIDDHI RAMESH	Soil Analysis	<u>Chikane</u>
105	158	SHINDE ADITYA BALAWANT	Estimation of nitrogen analysis	<u>ABShinde</u>
106	159	SHINDE MAHESH BALASAHEB	Determination of caffeine in Tea sample	<u>M.B. Shinde</u>
107	160	THORAVE PRAJAKTA SATISH	Microwave assist hydrolysis of benzamide & benzyl chloride	<u>Thorave</u>
mic 108	161	GOLE SNEHAL SUBHASH		
109	162	JAGTAP SHUBHAM DIGAMBAR	Synthesis of drugs	<u>S.D. Jagtap</u>
110	163	CHAVAN SUKANYA VASANT	Microwave assisted hydrolysis of benzamide & benzyl chloride	<u>S.V. Chavan</u>
111	164	MANE SAKSHI GANGADHAR	Microwave assisted hydrolysis of benzamide & benzyl chloride	<u>Mane</u>
112	165	PAWAR SHRADDHA KRUSHNA	Microwave assisted hydrolysis of benzamide & benzyl chloride	<u>Pawar</u>
113	166	KHALATE ABHISHEK AUDUMBAR	Synthesis of drugs	<u>Khalate</u>
114	167	MORE SUYOG PRAMOD	Synthesis of drugs	<u>S.P. More</u>
115	168	CHAVAN SANCHITA NARAYAN	Tea Samples	<u>Chavan</u>
116	169	SANAS ABHIRAJ ARJUN	Tea Samples.	<u>Sanas</u>

117	170	SHIRKE SHUBHAM CHANDRAKANT	Determination of caffeine of tea sample	S.G. Shirke
118	171	SHINDE PRAVIN RAMESH.	Synthesis of drugs	P. Shinde
119	172	MAHANGADE PRITAM SANJAY.	synthesis of drugs	P. Mahangade
120	173	BHOSALE RUTURAJ SUBHASH		
121	174	MAHANGADE DHANARAJ VIKAS	Preparation of Mohr's salt from hydrate ferrous sulphate & ammonium sulphate	P. Mahangade
122	175	MAHANGADE RUSHIKESH LAHU	Preparation of Mohr's salt from hydrate ferrous sulphate & ammonium sulphate	P. Mahangade
123	176	ERANDE POOJA ANIL	Electrophilic Substitution Acetanilide and Anilide	P.A. Erande
124	177	PISAL SUSHMA AJIT	Electrophilic substitution Acetanilide and Anilide	
125	178	TARADE PRANJAL PANDURANG	Electrophilic Substitution Acetanilide and Anilide	P. Tarade
126	179	TARADE GIRISH DHANANJAY	Electrophilic Substitution Acetanilide and Anilide	P. Tarade
127	180	BHOSALE SHIVAM SHAILESH	Preparation of Mohr's salt from hydrated ferrous sulphate & ammonium sulphate	P. Bhosale
128	181	MAHANGADE OMKAR SANJAY	Electrophilic Substitution Acetanilide and Anilide	
129	182	BHOSALE ANIMISH NARENDRA	Electrophilic Substitution Acetanilide and Anilide	A.N. Bhosale
130	183	BHOSALE HRUSHIKESH SUNIL	preparation of Mohr's salt from hydrated ferrous sulphate & ammonium sulphate	P. Bhosale
131	184	MANDHARE PRATIK HARIDAS	Electrophilic substitution Acetanilide and Aniline	P. Mandhare
132	185	KAZI AYAN LATIF	Preparation of Mohr's salt from hydrated ferrous sulphate and ammonium sulphate	A. Kazi
133	186	BHOSALE SURAJ RAMCHANDRA	preparation of Mohr's salt from hydrated ferrous sulphate & ammonium sulphate	S.P. Bhosale
134	187	JADHAV PRATIK DNYANESHWAR	Preparation of Mohr's salt from hydrate ferrous sulphate & ammonium sulphate	P. Jadhav
135	188	SHINDE AKASH PANDURANG	Preparation of Mohr's salt from sulphate & ammonium sulphate	A. Shinde
136	189	JAGTAP SUMIT PRAVIN	Analysis of Honey	S.P. Jagtap

137	190	KURUNDE PRATIK ANIL	Analysis of Honey	<u>P.A. Kurunde</u>
138	191	PAWAR SAKSHI SANJAY	Analysis of Honey	<u>Pawar</u>
139	192	TARATE PRAVEEN MILIND	Analysis of Honey	<u>TARATE</u>
140	193	WAGH OMKAR AJIT	Analysis of Thumsup Sprite & Limca.	<u>Wagh</u>
141	194	JAMDADE OMKAR YASHWANT		
142	195	PAWAR VISHAL HINDURAO	Analysis of Honey	<u>V. H. Pawar</u>
143	196	SAHIL SHIVAJI MANDHARE	Analysis of Honey	<u>S. S. Mandhare</u>
144	197	PHARANDE SIDDHESH MADANRAO	Analysis of Thumsup Sprite & Limca	<u>Pharande</u>
145	198	BHOSALE KUNAL DILIP	Analysis of Honey	<u>K. P. Bhosale</u>
146	199	ADSUL ADITYA DILIP	Analysis of thumsup, sprite & Limca.	<u>Ad. Adul</u>
147	201	BHOSALE NIKHIL RAMCHANDRA	Analysis of Thumsup, sprite & Limca	<u>Nikhil</u>
148	202	BHILARE KRUTIK DEEPAK	Analysis of Thumsup, Sprite & Limca	<u>Krutik</u>
149	203	SALUNKHE ADITYA RAMESH	Analysis of Thumsup, Sprite & Limca	<u>S. Salunke</u>
150	204	BHOSALE VINOD SANJAY	Analysis of Thumsup sprite & Limca	<u>Bhosale</u>
151	205	POL AKASH SURAJ	Preparation of Mohr's salt from hydrated.	<u>Pol</u>
152	206	SASANE DIPAK SANJAY		
153	207	JADHAV RAJ HIMMAT	Toothpaste Analysis	<u>Jadhav</u>
154	208	SHINDE SWARUP ARUN	Toothpaste Analysis	<u>Shinde</u>
155	209	GAIKWAD PRASAD RAVINDRA	Toothpaste Analysis	<u>Gaikwad</u>
156	210	JADHAV NIKITA SAMBHAJI	Preparation of Soap	<u>Jadhav</u>

157	211	SHRIDHAR RAJENDRA KADAM	Toothpaste Analysis	<u>S.Kadam</u>
158	212	POL MAYUR RAJENDRA		
159	213	KAMTHE ANKITA PRASHANT	Preparation of soap	<u>A.P.Kamthe</u>
160	214	MANDHARE SAYALI DILIP	Preparation of soap	Mandhare
161	215	JAIGUDE NISHANT PRAKASH	preparation of soap	<u>N.P.Jaigude</u>
162	216	DIVYA DEEPAK BAVALEKAR	Preparation of soap	<u>Divya</u>
163	217	BHOSALE SIDDHANTI DATTATRAY	preparation of soap	Bhosale
164	218	DHUMAL RUSHIKESH MUKUND	Mapro analysis Dhumal	<u>R.N.D.</u>
165	219	DHUMAL SURAJ JAGANNATH	Mapro analysis	<u>S.K.</u>
166	220	DHUMAL PRATHMESH BHARAT	mapro analysis	<u>P.B.Dhumal</u>
167	221	PAWAR SURAJ RAJENDRA	mapro analysis	<u>Pawar</u>
168	222	SHINDE VIKRAM SHIVRAM		
169	223	KORADE ANIRUDDHA ASHOK	Preparation of Soap	<u>Korade</u>

170 225 Nandure Sangameshwar
Bhimashankor

Analysis of mapro
product

Sangam

Sangam
PRINCIPAL
KRAN VEER MAHAVIDYALAYA
Wai, Dist. Satara



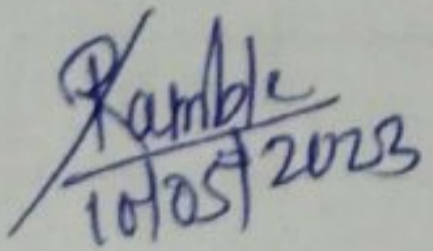
Head
Head
Department Of Chemistry
Kisan Veer Mahavidyalaya, Wai

CERTIFICATE

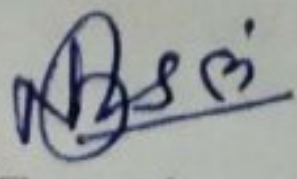
This is to certificate that Miss.Chavan Sukanya, Miss.Mane Sakshi, Miss.Pawar Shraddha, Miss.Gole Snehal, Miss.Thorave Prajakta Of **B.Sc-III** Class has successfully completed the project work entitled '*Microwave Assisted Hydrolysis of Benzamide & Benzyl Chloride,*' in practical fulfillment of the award of bachelor of chemistry under the guidance of **Miss. R.R.Kamble** Taking during the year **2022- 2023** as prescribed by the Shivaji University, Kolhapur.

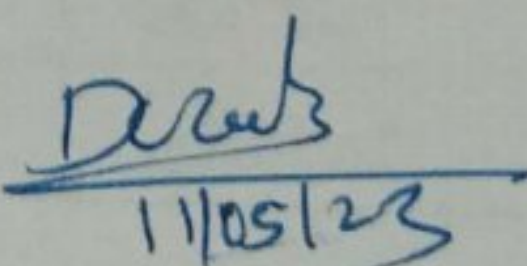
Date :

Place : wai


Miss.R.R.Kamble

Project Guide


Examiner


Prof.D.N.Zambare

Head of Department Chemistry
Kisan Veer Mahavidyalaya, Wai



CERTIFICATE

This certify that **Nishant Jaigude, Sayali Mandhare, Divya Bavlekar, Aniruddha Korade, Nikita Jadhav, Ankita Kamthe, Siddhanti Bhosale** has successfully completed the project work on "**Preparation of Soap**" which is being submitted here with a partial fulfillment for the award of Degree Bachelor of Science. This project is the result of original work completed under my guidance and to the best of my knowledge.

ABCgadhave
10/05/23

Miss. Prof. A.B. Gadhave
(Department of Chemistry)



ABC

External Examiner

D.N. Zambre
11/05/23

Prof. Dr. D.N. Zambre

(Head of Department)
Head

Department Of Chemistry
Kisan Veer Mahavidyalaya, Warananagar

Shivaji University Kolhapur



CERTIFICATE

This is certifying that Mr.Jadhav Raj, Mr.Shinde Swarup, Mr.Gaikwad Prasad, Mr.Kadam Shridhar Completed the project work on "TOOTHPASTE ANALYSIS" which is being submitted here with as a partial fulfillment for the award of Degree if Bachelor of Science in Chemistry, Shivaji University, Kolhapur.

This project is the result of original work completed under my guidance and to the best of knowledge and belief the work embodied in this report has not formed earlier for the basis of any degree on similar title of this report has not formed earlier for the basis of any degree of similar title of this or any other University or examining.

A.B.Gadhare
11/05/23

Miss .A.B.Gadhare

Guidance



D.N.Zambre
11/05/23

Prof.D.N.Zambre

Head of Department
Chemistry

Head
Department of Chemistry
Kisan Veer Mahadevrao, Warananagar

External Examiner 1)

Shivaji University, Kolhapur. 2)

3)

A.S.C.

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHA VIDYALAYA, WAI

Dist-Satara



DEPARTMENT OF CHEMISTRY

CERTIFICATE

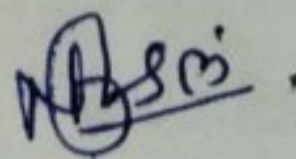
This is to certify that, following candidates **Mr.Abhijit Shankar Kumbhar, Mr.Nikhil Sanjay Honkalaskar, Mr.Sahil Shantaram Tike, Mr.Mayur Sanjay Tarate, Mr.Abhijit Shivaji Tarate, Mr.Dipak Kisan Gurav, Mr.Yash Dagdu Jadhav** of **B.Sc.-III** has successfully completed the project work entitled Preparation Of phenytoin in practical fulfillment of the award of Master of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2022-2023.

Date :-

Place :- Wai.

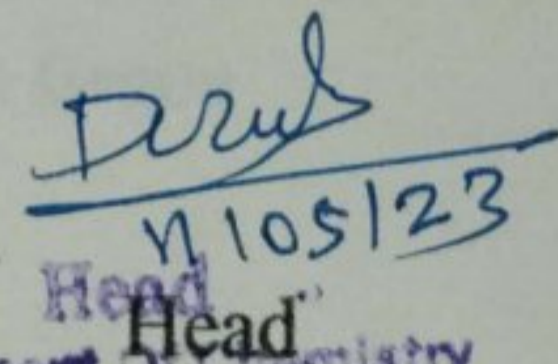

Guide

(Miss.P.S.Bhosale)



Examiner




N/105123
Head

Department of Chemistry
Kisan Veer Mahavidyalaya, Wai

2022-2023



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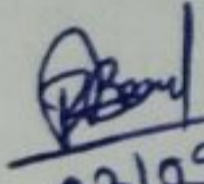
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JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAY, WAI



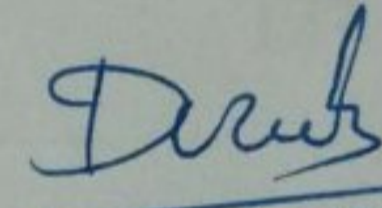
CERTIFICATE
SUGARCANE JUICE

This is to certify that Miss. Sankpal Rutuja Narayan, Miss. Jadhav vaishnavi abhijit, Mr. Mandhare Shubham Dattatray, Mr. Bhilare Aaditya Vijay, Mr. Rajpure Yash Vijay of B.Sc.3 has completed the report of the field work on SUGARCANE JUICE of chemistry science subject satisfactory under the guidance of Prof. R. J. Bhoite during the year 2022-2023 as prescribed by the Shivaji University Kolhapur.


03/05/23

Miss. R. J. Bhoite

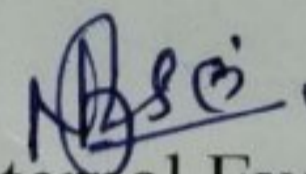
(Department of Chemistry)


10/05/23

Prof. (Dr.) D. N. Zambre

(Head of Department of Chemistry)

Professor and Head
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai


External Examiner



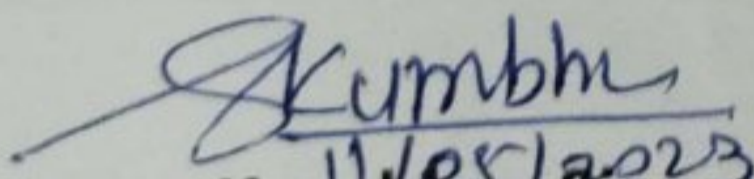
JantaShikshanSanstha's

Kisan Veer Mahavidyalaya Wai



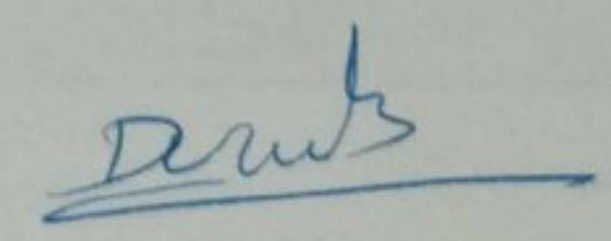
CERTIFICATE

This is to certify that, **Chikane Riddhi Ramesh, Jadhav Uttara Vilas, Chikane Siddhi Ramesh, Shinde Sakshi Santosh, Jadhav Divya Nitin** of **B.Sc-III** class has completed the report of the fieldwork on **"SOIL ANYALISIS"** of Environmental Science Subject Satisfactory under the guidance of **Prof. D. N. Zambre** during the year 2022-2023 as prescribed by the Shivaji University, Kolhapur.


Dr. Kumbhar Sir

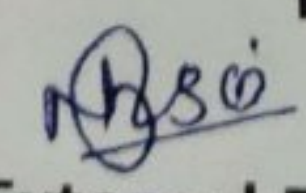
Guide




Prof. D. N. Zambre

Head of Department of Chemistry

Kisan Veer Mahavidyalaya, Wai


External Examiner

Shivaji University, Kolhapur



JANATA SHIKSHAN SANSTHA'S

Kisan Veer Mahavidyalaya, Wai

Dist-Satara



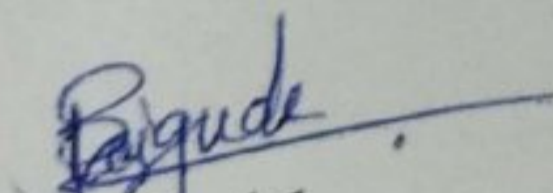
DEPARTMENT OF CHEMISTRY

Certificate

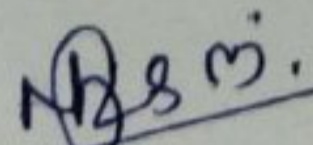
This is to certify that, following candidates of **SHINDE JAYESH VIJAY, BHOITE PRAJWAL DEVIDAS, and CHOUDHARI RAHUL SURESH** B.Sc.-III has successfully completed the project work entitled "**CHOCOLATE ANALYSIS**" in practical fulfillment of the award of Bachelor of Science in Chemistry as laid down by the **Shivaji University, Kolhapur** during the academic year 2022-2023.

Date :-

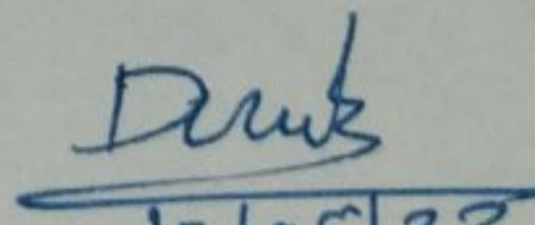
Place: - Wai.


Guide

(Miss. P.S. Jaigude)


Examiner




10/05/23
Head

Department of chemistry
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai.

JANATA SHIKSHAN SANSTHA'S

Kisan Veer Mahavidyalaya, Wai

Dist-Satara



DEPARTMENT OF CHEMISTRY

Certificate

This is to Certify that, following candidates
Mr.Sangram Dattatray Kakade, Mr.Aditya Balwant Shinde, Mr.Shrikant Shantaram Ghorpade, Mr. Siddhesh Ajit Jagtap of B.Sc.-III has successfully completed the project workentitled Estimation of nitrogen analysis in practical fulfillment of the award of Master of Chemistry as laid down by the **Shivaji University, Kolhapur** during the academic year 2022-2023.

Date :- 10/05/2023

Place :- Wai.

Bhosale
10/05/2023

Guide

(Miss.R.M.Bhosale)

R.S.M.

Examiner



D. S. M.
10/05/23

Head

Department of Chemistry
Kisan Veer Mahavidyalaya, Wai



JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA, WAI



CERTIFICATE

This is to certify that **Chavan Sanchita, Sanas Abhiraj, Shirke Shubham, Shinde Mahesh** Of **B.Sc. III** students has successfully completed the project work in the English entitled **“Determination Of Caffeine in Tea Samples”** the Prescribed by the Shivaji University Kolhapur during academic year 2022-2023.

Kamble
10/05/2023
Project Guide

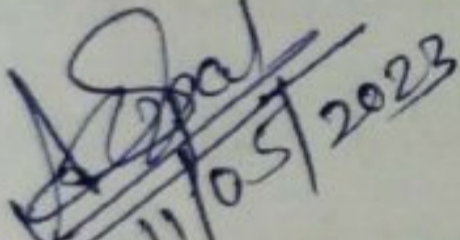
M.S.M.
Examiner

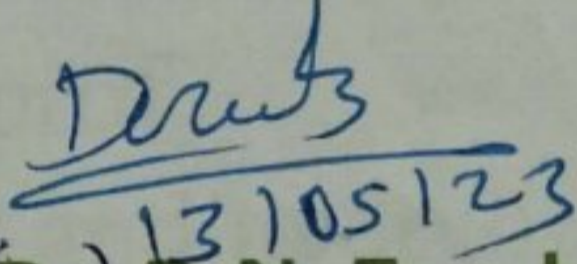
D. S. S.
11/05/23
Head, Dept,
Head
Department Of Chemistry
Kisan Veer Mahavidyalaya, Wai

CERTIFICATE OF THE SUPERVISOR

This is to certify that **Master Bhosale Shivam, Bhosale Hrushikesh, Bhosale Suraj**. has successfully completed the project work on "**Preparation of Mohr's Salt from hydrated ferrus sulphate and ammonium sulphate**". as partial fulfillment for the award of degree of bachelor of science in chemistry . shivaji university Kolhapur.

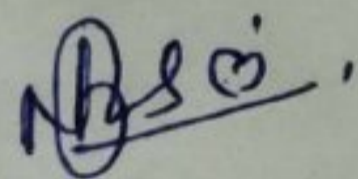
This Project is the result of data information collected from the respective information media and we have successfully verified the result obtained .All the resulting aspects are found to be correct and appropriate in the view of this project and the best of our knowledge.


Miss. A.S. Sankpal


Prof (Dr) D.N. Zambre

Department of Chemistry

Head of Department of Chemistry



Head
Department of Chemistry
Kisan Vastu Mahave

External Examiner

Shivaji university, Kolhapur



CERTIFICATE

This is to Certify that the following candidates **Miss .Karne Payal Nandkumar, Mr. Kumbhar Mayur Jitendra, Mr.Shedge Aman Pradeep, Mr. Erande Vikram Dilip** of B.Sc.-III has successfully completed the project work entitled **“MEASURING THE AMOUNT OF ACETIC ACID IN DIFFERENT TYPES OF VINEGAR”** in practical fulfillment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2022-2023.

Kamate
09/05/2023

Project Guide

Miss. R. S. Kamate

K.S. B.

Examiner

Dr. B.
10/05/23

Head

Department of chemistry

Professor and Head

Department of Chemistry

Kisan Veer Mahavidyalaya, Wal



2

DEPARTMENT OF CHEMISTRY

Certificate

This is to Certify that, following candidates Ms. Akanksha Mahadev Mohite , Ms. Akanksha Sanjay Sawant, Ms. Shweta Shatrughna Mandhare, Ms. Pratiksha Dilip Khandagale, Mr. Prathamesh Dattatray Shelar. of B.Sc.-III has successfully completed the project work entitled Analysis of Honey in practical fulfillment of the award of Master of Chemistry as laid down by the **Shivaji University, Kolhapur** during the academic year 2022-2023.

Date :- 10/05/23

Place :- Wai.

Kamate
09/05/2023
Guide

(Miss.R.S.Kamate)

NPB
Examiner

Dr. S. S. Patil
10/05/23
Head

Professor and Head
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai



CERTIFICATE

This is to certificate that **Mr .Dhumal pranil pramod, Miss. Gaikwad Nikita Sanjay, Mr. Jagtap Prathmesh Satish, Miss. Shinde Rutuja Gulabsing, Mr. Dhumal Sanket Ramchandra.** Of **B.Sc-III** Class has successfully completed the project work entitled **Estimation of aspirin,** in practical fulfillment of the award of bachelor of chemistry under the guidance of **Mr.S.D.Kumbhar** Taking during the year **2022- 2023** as prescribed by the Shivaji University, Kolhapur.

Date :

Place : wai

S.Kumbhar
8/5/2023

Mr. S.D.Kumbhar

Project Guide

N.S.B.

Examiner

D.N.Z.

Prof.D.N.Zambare

Head of Department Chemistry



Professor and Head
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai



JANTA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA , WAI

Dist-SATARA



DEPARTMENT OF CHEMISTRY

This is to certify that Mr.Onkar Borate, Mr.Mrugendra Tanaji Gurav , Mr.Ajay Gimvekar, Mr.Prajwal Jamdade, Mr.Sohan Puri, Mrs.Neha Sutar, Mr.Vishal Waghmare has successfully completed the project work entitled "Aldol condensation of acetophenone and 3-nitrobenzaldehyde" in practical fulfillment of the award of master of chemistry as laid down by the Shivaji University, Kohlapur during the academic year 2022-2023.

Date:- 9-5-23

Place:- WAI



P.S. Bhosale

Guide

(Miss. P.S.Bhosale)

M.S.M.

Examiner

D.N. Zambare

Head

Professor and Head
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai
(Prof.(Dr.)D.N.Zambare)



Kisan Veer Mahavidyalaya, Wai
Dist. Satara

2022-2023

DEPARTMENT OF CHEMISTRY

Certificate

This is Certify to that, following candidates, **Miss Priti Dagadu Kochale, Miss. Rutuja Shravan Yadav, Miss. Rucha Umesh Sasane, Mr. Shreyas Pradip Gaikwad, Mr. Abhishek Rajkumar Sanas**, of B.Sc.-III (Chemistry) has successfully completed the project work entitled "**Estimations of phosphorus from mixed fertilizer**" in practical fulfilment of the award of Bachelor of Chemistry as laid down by the **Shivaji University, Kolhapur** during the academic year 2022-23.

Guide

Mr. A. A. Dhanawade

Examiner

Head

Head

Department Of Chemistry
Kisan Veer Mahavidyalaya, Wai



CERTIFICATE

This is to Certify that the following candidates **Miss. Shivanjali Rajendra Gadhave, Miss. Sayali Ananda Satpute, Miss. Shrutika Subhash Ranjane, Miss. Megha Navnit Misal and Mr. Omkar Shivaji Wagh** of B.Sc.-III has successfully completed the project work entitled "**Synthesis of Phenytoin (Benzillic acid rearrangement)**" in practical fulfillment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2022-2023.

Kamate
06/05/2023

Project Guide
Miss. R. S. Kamate

M. S. C.

Examiner

Dr. S. S.
08/05/23

Head

Department of chemistry
Professor and Head
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai



JANATA SHIKSHAN SANSTHA'S

Kisan Veer Mahavidyalaya, Wai

Dist-Satara



DEPARTMENT OF CHEMISTRY

Certificate

This is to certify that, following candidates of **MR. MAHANGADE PRATIK BALKRISHNA, MISS. BHANDIRGE DHANSHREE RAJENDRA, MR. SALUNKHE SUSHANT SANTAJI, MISS. KARPE TEJASHRI SATYWAN, MR. SHINDE SHIVDAS HEMANT, MISS. NIKAM KAJAL VIKAS** B.Sc.-III has successfully completed the project work entitled "**CHEMISTRY INVESTIGATORY PROJECT ON FOOD ADULTERATION**" in practical fulfillment of the award of Bachelor of Science in Chemistry as laid down by the **Shivaji University, Kolhapur** during the academic year 2022-2023.

Date :- 09/05/23

Place: - Wai.

P.S. Jaigude
09/05/23

Guide

(Miss. P.S.Jaigude)

M.S.M.

Examiner



Dr. S. S. ...

Head
Professor and Head
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai



JANATA SHIKSHAN SANSTHA'S
Kisan Veer Mahavidyalaya, Wai

Dist-Satara



DEPARTMENT OF CHEMISTRY

Certificate

This is to Certify that, following candidates
Mr. Tejas Bhanudas Pawar, Mr. Akash Suryakant Dhumal, Mr. Sumit
Mahesh Dhumal, Mr. Aditya Madhukar Solaskar, Mr. Abhishek
Nandkumar Dhumal, Mr. Sanket Dhansing Yadav, Mr. Prafulla
Sanjay Shivthare, Mr. Shubham Madan Kambale of B.Sc.-III has
successfully completed the project work entitled Silver Mirror
test with tollan's Reagent in practical fulfillment of the award
of Master of Chemistry as laid down by the **Shivaji
University, Kolhapur** during the academic year 2022-2023.

Date :- 03/05/23

Place :- Wai.

Bhosale
03/05/2023

Guide

(Miss.R.M.Bhosale)

ABSO

Examiner

Dr. B. K. ...

Head

Department of chemistry
Head
Department Of Chemistry
Kisan Veer Mahavidyalaya, Wai



JANATA SHIKSHAN SANTHA'S

Kisanveer Mahavidyalaya, Wai

Dist-Satara



DEPARTMENT OF CHEMISTRY

Certificate

This is to certify that following candidates *Mr Tarade Pranjal Pandurang , Tarade Girish Dhananjay , Mahangade Omkar Sanjay , Erande Pooja Anil , Mandhare Pratik Haridas , Bhosale AnimIsh Narendra,,Pisal Sushma Ajit* of BSC-III has successfully completed the project work entitled "ELECTROPHILIC AROMATIC SUBSTITUION OF ACETANILIDE AND ANILINE" in pratical fulfilment of the awaed of master of chemistry as laid down by the Shivaji University Kolhapur during the academic year 2022-23

A.S. Sankpal
9/5/2023

Miss. A.S. Sankpal

Department Of Chemistry



D.N. Zambre

Prof. (Dr.) D.N. Zambre

Professor and Head
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai

Absoi

External Examiner

Shivaji University, Kolhapur

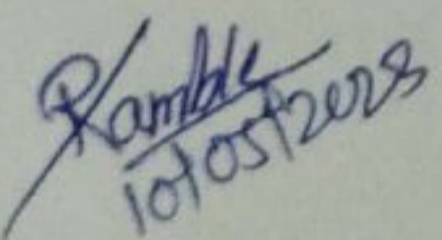


CERTIFICATE

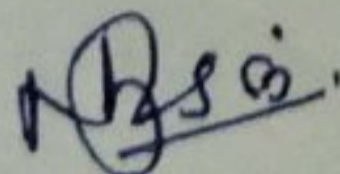
This is to certificate that Shinde Pravin, Mahangade Pritam, More Suyog, Khalate Abhishek, Jagtap Shubham Of **B.Sc-III** Class has successfully completed the project work entitled '**Synthesis Of Drugs,**' in practical fulfillment of the award of bachelor of chemistry under the guidance of **Miss. R.R.Kamble** Taking during the year **2022- 2023** as prescribed by the Shivaji University, Kolhapur.

Date : 11-5-23

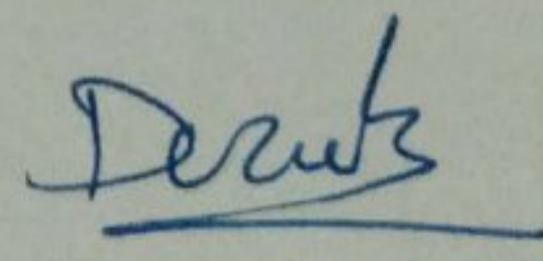
Place : wai


Miss.R.R.Kamble

Project Guide


Examiner




Prof.D.N.Zambare

Head of Department Chemistry

Head
Department Of Chemistry
an Veer Mahavidyalaya, Wai

CERTIFICATE OF THE SUPERVISOR

This is to certify that **Master Dhanraj Vikas Mahangade, Akash suraj Pol, Rushikesh Lahu Mahangade, Akash Pandurang shinde, Pratik Dnyaneshwar jadhav, Ayan Latif kazi.** has successfully completed the project work on **“Preparation of Mohr’s salt from hydrated ferrous sulphate and ammonium sulphate”** of which is being submitted herw with as partial fulfillment for the award of degree of bachelor of science in chemistry . shivaji university Kolhapur.

This Project is the result of data information collected from the respective information media and we have successfully verified the result obtained .All the resulting aspects are found to be correct and appropriate in the view of this project and the best of our knowledge.

A.S. Sankpal
9/5/2023

Miss. A.S. Sankpal

Department of Chemistry



D.N. Zambre

Prof. Dr. D.N. Zambre

Professor and Head

Department of Chemistry
Head of Department of Chemistry

B.S. S.

External Examiner

Shivaji university, Kplhapur

Kisan Veer Mahavidyalaya, Wai

Dist - Satara

2022-2023



DEPARTMENT OF CHEMISTRY

Certificate

This is Certify to that, following candidates, **Miss Prachi Uttamrao Pisal, Miss Smita Anil Bhosale, Miss Shahista Hasan Bagwan, Miss Shreya Pravin Dahotre** and **Mr. Yash Jitendra Pisal** of B.Sc.-III have successfully completed the project work entitled "**Preparation of Paint Pigments**" in practical fulfillment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2022-2023.

Date: 11/05/23

Place: Wai

Guide

Mr. A. A. Dhanawade

Examiner

Head

Dr. D. N. Zambre

Department of

Chemistry

Kisan Veer Mahavidyalaya, Wai



JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA, WAI



DEPARTMENT OF CHEMISTRY

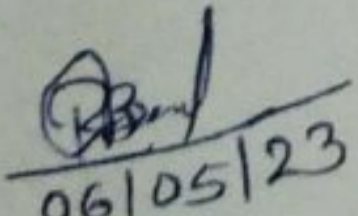
CERTIFICATE

This is to certify that, following candidates **Mr.Ashutosh Panse, Mr.Sourabh Salunke, Mr.Vinay Shevale, Mr.Sarvesh Patil, Mr.Mangesh Kumbhar** Of **B.Sc. III** students has successfully completed the project work entitled **“Quality Control : Analysis of Everyday Product”**

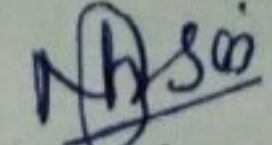
In practical fulfillment of the award of Master of Chemistry as laid down by the **Shivaji University Kolhapur** during academic year 2022-2023.

Date :-06/05/23

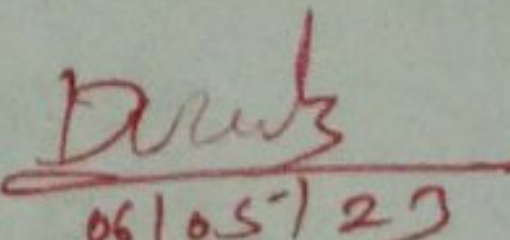
Place : Wai


06/05/23
Project Guide

(Miss.R.J.Bhoite)


Examiner




06/05/23
Head,

Professor and Head
Dept. of Chemistry
Department of Chemistry
Kisan Veer Mahavidyalaya, Wai

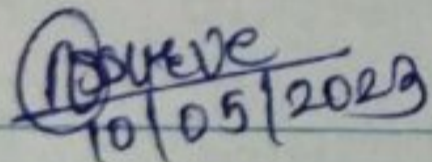


Janta Shikshan Sanstha's
Kisan Veer Mahavidyalaya Wai

CERTIFICATE

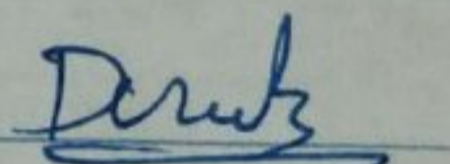
This is to certify that, **Bhosale Nikhil Ramchandra, Wagh Omkar Ajit, Adsul Aditya Dilip, Bhosale Vinod Sanjay, Salunkhe Aditya Ramesh** has the following student of **B.Sc. – III Chemistry** have satisfactory completed the project work entitled "**ANALYSIS OF THUMSUP, SPRITE & LIMCA**" as per curriculum of B.Sc. Part III Chemistry, Shivaji University, Kolhapur. Under the guidance of **Miss. N.S. Surve** in the year 2022-2023

This project is the result of data information collected from the respective information media and we have successfully verified the result obtained. All the resulting aspects are found to be correct and appropriate in the view of this project and the best of our knowledge.

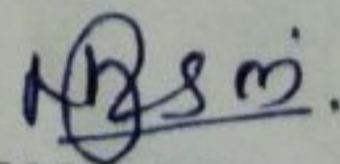

10/05/2023

Miss: N.S. Surve
Name of Guide





Dr. D. N. Zambre
Head of Department in Chemistry
Department Of Chemistry
Kisan Veer Mahavidyalaya, Wai



EXTERNAL EXAMINAR

JANATA SHIKSHAN SANSTHA'S
**KISAN VEER
MAHAVIDHYALAYA, WAI**



TITLE OF PROJECT

*"Quality Control: Analysis Of
Everyday Product"*

The Project Submitted to the
Shivaji University Of Kolhapur
In Practical Fulfillment of the

CLASS – B.Sc III

Submitted by

Sr.No.	Name of Student	Roll No.
1	Mr.Ashutosh Vinod Panse	115
2	Mr.Sourabh Hemant Salunkhe	118
3	Mr.Vinay Umesh Shevale	119
4	Mr.Sarvesh Sarjerao Patil	138
5	Mr.Mangesh Krushnrao Kumbhar	139

Under the Guidance of

Miss.R.J.Bhoite

Project Year-2022 – 2023



JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA, WAI



DEPARTMENT OF CHEMISTRY

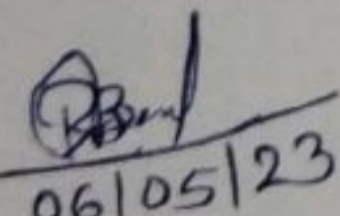
CERTIFICATE

This is to certify that, following candidates **Mr. Ashutosh Panshe, Mr. Sourabh Salunke, Mr. Vinay Shevale, Mr. Sarvesh Patil, Mr. Mangesh Kumbhar** Of **B.Sc. III** students has successfully completed the project work entitled **“Quality Control : Analysis of Everyday Product”**

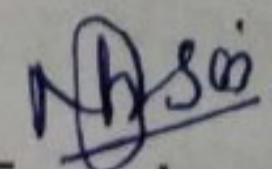
In practical fulfillment of the award of Master of Chemistry as laid down by the **Shivaji University Kolhapur** during academic year 2022-2023.

Date :- 06/05/23

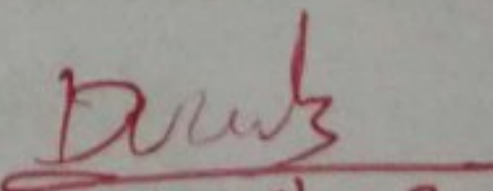
Place : Wai


06/05/23
Project Guide

(Miss.R.J.Bhoite)


Examiner




06/05/23
Head,

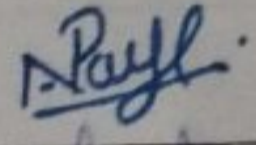
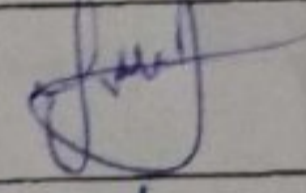
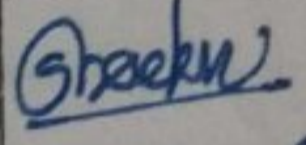
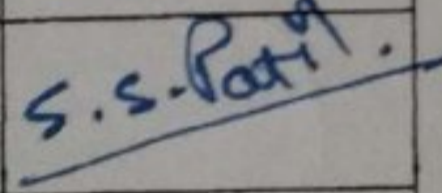
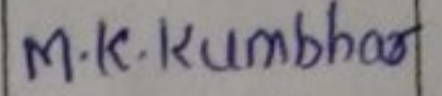
Professor and Head
Dept., of Chemistry
Department of
Kisan Veer Mahavidyalaya, Wai

DECLARATION

I here by declare that the project entitled "Quality Control : Analysis Of Everyday Product" Completed and written by me under the guidance and supervision of Miss. R.J.Bhoite has not previously formed the basis for the awardee of our Degree for and other university or examining body in academic year 2022-2023.

Place – Wai

Date – 06/05/23

Sr. No.	Roll No.	Name Of Students	Sign
1	115	Ashutosh Vinod Panse	
2	118	Sourabh Hemant Salunkhe	
3	119	Vinay Umesh Shevale	
4	138	Sarvesh Sarjerao Patil	
5	139	Mangesh Krushnrao Kumbhar	

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Introduction

Very few people actually pay attention to what goes into common household products and many would be surprised by what can be found in these products. From cleaning supplies to prescription drugs, government regulations protect the well being of citizens by employing quality control standards. These standards ensure that the products available to people are safe to use. One way they enforce these standards through quality control is by conducting a quantitative analysis. Quantitative analysis is the analysis of a substance to determine the amounts or proportions of its chemical components². The use of quantitative analysis in chemistry is integral because it gives more concrete and specific data than a qualitative analysis would.

The objective of this experiment is to explore processes similar to those that are followed when conducting a quality control report³. Moreover, another objective of this experiment is to determine the amount of acid or base that is present in the chosen household substances, baking soda and vinegar, and to compare and contrast the findings from the analysis with the reports from the manufacturer³. By performing quality control analysis on two commercial products, a quantitative analysis can be performed to compare the information found on the manufacturer reports against the results gathered from this experiment.

Being able to identify the quantity of an acid or base present in a common substance is important because it has many practical real life applications. For example, there are often many mistakes found on product labels. Moreover, this means that some times the concentrations of ingredients during production processes are not properly



regulated. As stated above, industries and government agencies have put quality control regulations into effect to prevent these mistakes from occurring¹. There are standards in place for food, medicinal drugs, cosmetics, cleaning products and many more common substances¹.

The proposed experimental procedure below is effective in addressing the objectives stated above because it allows for enough quantitative data to be gathered so that an accurate comparison can be made between the experimental findings and the manufacturer's label. Therefore, allowing whether or not the manufacturer's label is accurate to be explored.

Methods

Dilution of NaOH and KHP

Proper personal protective equipment was worn and hair was tied back. All glassware was rinsed with distilled water and dried to minimize contamination. 250 mL of distilled water was added to a 500 mL beaker along. The amount of NaOH needed was determined using the dilution equation: $M_1V_1=M_2V_2$ (see Results section for sample calculation) .1.004g of NaOH was measured out using an electronic scale. The 1.004g of NaOH was added to the beaker to create a 0.1 M diluted solution of NaOH. 50 mL of distilled water was added to a 100mL beaker. The amount of KHP needed was determined using the dilution equation. 1.026 KHP was measured out using an electronic scale and added to the beaker to create a 0.1 M solution of diluted KHP. Caution was taken when handling the NaOH and KHP because both substances can cause irritation in cases of skin or eye contact and cases of inhalation or ingestion^{4,5}.

Standardization of NaOH and HCl

NaOH

A 50mL burette was washed with distilled water to reduce contamination. A titration stand was set up in the middle of the lab bench to reduce safety hazards. A clamp was attached to the titration stand and held a 50mL burette. 32.6 mL of the diluted NaOH solution was poured into the 50mL burette. A 250mL Erlenmeyer flask was filled with 50 mL of distilled water, 0.5 g of KHP was measured out using an electronic scale. The 0.5 g of KHP was added to the Erlenmeyer flask along with 5 drops of phenolphthalein. A white piece of paper was placed underneath the Erlenmeyer flask so that a change in color could be seen more clearly. The Erlenmeyer flask was placed on the titration stand base under the 50mL burette. The KHP solution was titrated by slowly adding the diluted NaOH solution drop by drop. The Erlenmeyer flask was swirled to evenly distribute the NaOH. This occurred until there was color change from clear to light pink occurred in the KHP solution. The amount of NaOH used was recorded in Table 1. This was repeated two more times. Caution was taken when handling phenolphthalein because it can be hazardous in cases of skin and eye contact or ingestion

HCl

The 50 mL burette was rinsed with distilled water to prevent contamination. 21 mL of the previously standardized solution of NaOH and KHP was poured into the 50 mL burette. A new 250mL Erlenmeyer flask was obtained and rinsed with distilled water to prevent contamination. 50 mL of HCl and 5 drops of phenolphthalein were added to the 250 mL Erlenmeyer flask. A white piece of paper was placed underneath the Erlenmeyer flask so that a change in color could be seen more clearly. The Erlenmeyer flask was placed on the titration stand base under the 50mL burette. The HCl solution was titrated

by slowly adding the standardized NaOH solution drop by drop. This occurred until a color change from clear to light pink occurred in the HCl solution. The amount of standardized NaOH solution used was recorded in Table 2. This was repeated two more times (the amount of standardized NaOH in the burette ran out between trial 1 and 2 so 39mL more of standardized NaOH was added to the burette before the experiment proceeded). Caution was taken when handling HCl because it can be hazardous in cases of skin and eye contact or cases of inhalation or ingestion⁶.

Concentration of Baking Soda

Glassware was checked for cracks and cleaned with distilled water to prevent contamination. The amount of baking soda required to make a 0.1 M solution was calculated using the mass percent equation because the molarity of the baking soda was unknown (check the Results section for sample calculation). 0.106 g of baking soda was measured out using an electronic scale. 0.106g of baking soda was dissolved into 100 mL of distilled water in a 500mL beaker. 15mL of the diluted baking soda was added to a 250mL Erlenmeyer flask along with 10 drops of bromothymol blue. A titration stand was set up in the middle of the table to limit any safety hazards. A clamp was attached to the stand and a 50 mL burette was attached to the clamp. The burette was placed over the Erlenmeyer flask. A white piece of paper was placed under the Erlenmeyer flask to identify the color change more easily. 33.5 mL of HCl was poured into the 50 mL burette. Drop by drop HCl was titrated into the baking soda solution in the Erlenmeyer flask until a color change from blue to yellow occurred. The flask was swirled to evenly distribute the HCl into the baking soda solution. The amount of HCl used was recorded in Table 3. This was repeated two more times. Caution was taken when handling HCl, baking soda

and bromothymol blue because it can be hazardous in cases of skin and eye contact or ingestion and inhalation^{7,8,9}.

Concentration of Vinegar

The 50mL burette was rinsed to avoid contamination. A mass percent calculation was used to determine how much vinegar needed to be diluted with distilled water. 0.5 mL of white vinegar was added to 50 mL of distilled water in a clean 500 mL beaker. 15 mL of the diluted vinegar solution was added to a 250mL Erlenmeyer flask along with 10 drops of phenolphthalein. A titration stand was set up in middle of the table to prevent safety hazards. A clamp was attached to the stand and a 50 mL burette was attached to the clamp. The burette was placed over the Erlenmeyer flask. The diluted solution of NaOH was poured into the 50 mL burette. Drop by drop NaOH was titrated into to the diluted vinegar until a color change from clear to light pink occurred. The amount of NaOH used was recorded in Table 4. This was repeated two more times. At the end of the experiment all excess materials were disposed of in the liquid waste container to prevent contamination.

Results

Table #1: Standardization of NaOH with KHP

Trial #1	Trial #2	Trial #3
$V_i = 32.6 \text{ mL}$	$V_i = 20.5 \text{ mL}$	$V_i = 33.5 \text{ mL}$
$V_r = 20.5 \text{ mL}$	$V_r = 5.8 \text{ mL}$	$V_r = 21.5 \text{ mL}$
NaOH used = 14.2 mL	NaOH used = 14.7 mL	NaOH used = 21.5 mL

Table 1: This table shows the dilution of NaOH with 10 mL of KHP and 4 drops of phenolphthalein.

Table #2: Standardization of HCl with Diluted NaOH

Trial #1	Trial #2	Trial #3
$V_i = 21 \text{ mL}$	$V_i = 47 \text{ mL}$	$V_i = 33.2 \text{ mL}$
$V_f = 8 \text{ mL}$	$V_f = 33.2 \text{ mL}$	$V_f = 22.3 \text{ mL}$
NaOH used = 13 mL	NaOH used = 13.8 mL	NaOH used = 10.9 mL

Table 2: This table shows the dilution of 10 mL of HCl with NaOH and 5 drops of phenolphthalein.

Table #3: Concentration of Baking Soda

Trial #1	Trial #2	Trial #3
$V_i = 33.5 \text{ mL}$	$V_i = 35 \text{ mL}$	$V_i = 36.5 \text{ mL}$
$V_f = 35 \text{ mL}$	$V_f = 36.5 \text{ mL}$	$V_f = 37.7 \text{ mL}$
HCl used = 1.5 mL	HCl used = 1.5 mL	HCl used = 1.2 mL

Table 3: This table shows the concentration of baking soda.

Table #4: Concentration of Vinegar

Trial #1	Trial #2	Trial #3
$V_i = 37 \text{ mL} + 10.5 \text{ mL}$	$V_i = 11.6 \text{ mL}$	$V_i = 26.5 \text{ mL}$
$V_f = 50.5 \text{ mL}$	$V_f = 26.5 \text{ mL}$	$V_f = 11.8 \text{ mL}$
NaOH used = 14.6 mL	NaOH used = 14.9 mL	NaOH used = 15.3 mL

Table 4: This table shows the concentration of vinegar.

It was found that when determining the concentration of baking soda with the help of bromothymol blue, the first trial used 1.5 mL of HCl to reach its titration endpoint, the second trial used 1.5 mL of HCl to reach its titration endpoint and the third trial used 1.2 mL of HCl to reach its titration endpoint. Moreover it was found that when determining the concentration of vinegar with the help of phenolphthalein, the first trial used 14.6 mL of NaOH to reach its titration endpoint, the second trial used 14.9 mL of

NaOH to reach its titration endpoint and the third trial used 15.3 mL of NaOH to reach its titration endpoint.

Sample Calculations

Dilution Equation (used to dilute NaOH with distilled water)

$$M_1V_1=M_2V_2 \rightarrow (3M)(V_1)=(0.5M)(250\text{mL}) \rightarrow \text{ISOLATE FOR } V_1 \rightarrow V_1=41.6 \text{ mL}$$

Mass Percent (to determine proportions household product dilutions)

BAKING SODA

$$\% = (\text{mass/volume})(100) \rightarrow 0.1\% = (x/100\text{ml})(100) \rightarrow \text{ISOLATE FOR } X \rightarrow x=0.1\text{g}$$

****this calculation was used for vinegar as well****

Calculating Concentration of Household Products

VINEGAR TITRATION (bottle of vinegar was 480 mL)

$$\text{Calculate Proportions} \rightarrow 5\text{mL}/100\text{mL}=x/480\text{mL} \rightarrow x=24\text{mL}$$

$$\text{Convert to grams using density} \rightarrow (24\text{mL CH}_2\text{COOH})(1.01\text{g}/1\text{mL})=24.24\text{g}$$

$$\text{Convert grams to moles using molar mass} \rightarrow (24.24\text{g})(1\text{mol}/60.0\text{g})=0.404 \text{ mol}$$

$$\text{Calculate molarity using total solution (in L)} \rightarrow 0.404\text{mol}/0.480\text{L}=0.84\text{M}$$

BAKING SODA CONCENTRATION

(average concentration of HCl)(HCl used/1000mL)(molar mass baking soda)

$$\rightarrow (0.143\text{mol/L})(1.5\text{mL}/1000\text{mL})(84\text{g/mol}) = 0.018\text{g}$$

****done for all trials and averaged****

Discussion

The above results are important to the report because the amount used to titrate allows for the concentration of acid in vinegar to be determined and the concentration of

base in baking soda to be determined. Calculating the molarity of the vinegar solution and the molarity of the baking soda allows this to be determined. These calculated molarities can then be compared to the concentrations on the manufacturer's label. Allowing the accuracy of the manufacturer's label to be determined and therefore fulfilling the major objective of this experiment.

It was found that when tested the vinegar was found to have a molar concentration of 0.84 M. Whereas the commercial label claimed the vinegar had a 5% concentration for 480mL. Meaning the weight of the solute (acetic acid) would be 24g. Using the sample equations above, the molar concentration of the commercial vinegar can be found using the solute mass (24g), molecular weight (60.05g) and solution volume (480mL). The molar concentration of commercial vinegar is 0.83 M. This is close to the results the experiment yielded, thus proving that the manufacturer's label is accurate. On the contrary, the results for the analysis of the concentration of a base in baking soda did not match up with the projected concentration of base reported by the manufacturer's label. The results concluded the baking soda had a concentration of about 0.018g of base. However, the manufacturer's label claimed a 0.5g concentration of base. This discrepancy was most likely due to sources of error that may have occurred throughout the experiment.

Some sources of error that could have occurred in this experiment were that the measurements may have been inaccurate. For example, exact amounts of NaOH, HCl, baking soda or vinegar may not have been measured out correctly. Furthermore, the concentration of acid or base may be inaccurate. This is due to the fact that the molarity of baking soda was unknown. Which means the mass percent had to be used to find the

concentration. Moreover, the calculations for mass percent may be slightly off due to the fact that rounding was involved. Additionally, the titrations were occasionally carried too far past their endpoint resulting in a dark pink end solution. Meaning that the amounts used of HCl or NaOH to standardize or determine concentration could be off. Finally, the measurements planned out in the initial procedure were not accurate and need to be reworked on the day of the experiment. This was because our proportions were too large and the amount of substance that would have had to been made was not realistic. This meant that the calculations had to be redone in a short period of time. Since the calculations were rushed, there may be mistakes in the quantities determined due to mathematical errors. Therefore, making the concentrations inaccurate as well. In order to minimize sources of error next time, better pre-planning is necessary to minimize any last minute confusion in regards to calculations. Also, taking time to measure substances and taking time to titrate to the right endpoint is vital in ensuring results that are as accurate as possible.

Conclusion

Conclusively, it was found that based on the tests that were performed and the results that were gathered, the concentration of acid in vinegar and base in baking soda was close to the manufacturer's label but not exact. However, due to the sources of error established in the discussion, it can be assumed that the manufacturer's labels are accurate because they are very similar to the concentrations calculated from the data collected. This experiment did an excellent job of illustrating why quantitative analysis is an integral part of chemistry and how exactly it can be used in a lab setting: such as identifying concentrations of acids and bases in common household substances.



Research Connection

The results and skills learned through this experiment can be applied to real life scenarios. For example, measuring bioavailability of drugs, purifying drugs during synthesis, and identifying drug metabolic pathways (Knaack, 2012). Pharmacists must be able to accurately determine how much of each chemical component is required, or can be found, in certain medications (Knaack, 2012). Quality control is important in the pharmaceutical industry because doctors to be able to ensure that they are prescribing patients a good quality product that is effective in regards to treatment (Knaack, 2012). Quality control ensures that the drug is physically and chemically pure, contains the same amount of ingredients mentioned on the manufacturer's label, is in a form that is effective after administration, upholds a certain quality in regards to shelf-life and stability and has no toxic impurities (Knaack, 2012). Moreover, the quantitative analysis depends on the drug characteristic and its formulation. The purpose of this type of quantitative analysis and quality control is to ensure that a quality drug is made available to the patient (Knaack, 2012). By understanding how quantitative analysis works and the need for strong analytical chemistry skills in pharmaceutical research has allowed doctors and pharmacists to save lives every day. This goes to show how experiments conducted in the lab, and their results, can be applied practically to real life scenarios.

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