Report

Skill-Based Course Environment and Water Management

Department of Chemistry SSES Amt's Science College, Nagpur in collaboration with Rashtrasant Tukadoji Maharaj, Nagpur runs a Certificate course in Environment and Water Management for the session 23-24. The enrolled students were 38 and they performed practicals based on the syllabus and students actively participated in practical sessions and theory too. This course also includes the analysis of water samples from different places, during the analysis, students come to know the changes in the water sampling. This Activity helps students become aware of the environment and water conservation. Students play an important part in spreading knowledge to society. The water kit assembled by Dr. Sarang Dhote sir analyses about 15 parameters of water. All students were present for theory and practice throughout the session.

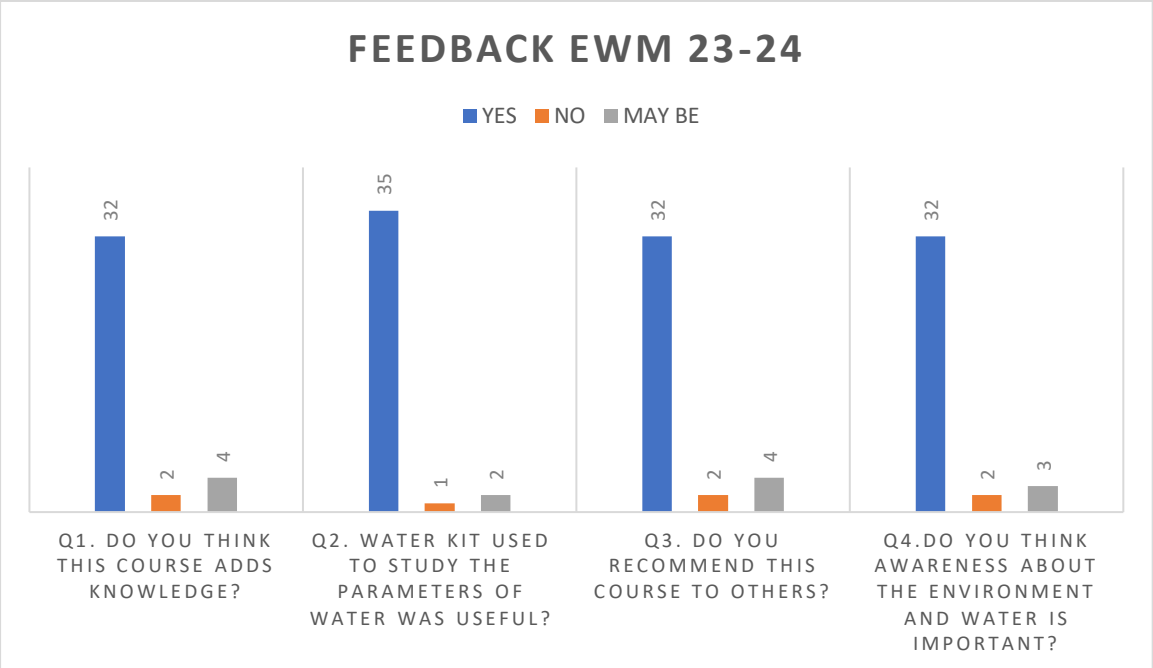
No.of Students Passed = 38

Some pictures of theory and practical examination sessions 23-24.

Action taken and Feedback

Department of Chemistry SSES Amt's Science College, Nagpur in collaboration with Rashtrasant Tukadoji Maharaj, Nagpur runs a Certificate course in Environment and Water Management for the session 23-24. The enrolled students were 38 and they performed practicals based on the syllabus and students actively participated in practical sessions and theory too. This course also includes the analysis of water samples from different places.

No of Benefited Students:- 38



Dr.Priyadarshani N.Deshmukh

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

[illegible]

DEPARTMENT OF LIFELONG LEARNING AND EXTENSION

Guru Nanak Bhavan, University Campus, Ambazari Bypass Road, Nagpur - 440033 Phone [illegible]

Dr. Nishikant Raut,(Director) Mob. No. 9422803768

To,
The Principal
SSES Amravati's Science College, Congress Nagar,
Nagpur.

No.DOLLE/464/23
Dated : 26. 10. 2023

Subject : **Sanction for Conducting Short Term Courses under Jeevan Shikshan Abhiyan on No Grant Basis. (2023-24)**

Sir/Madam,

With reference to your proposal for conducting Short Term courses indicated below under Jeevan Shikshan Abhiyan of this Department, this is to inform you that your proposal has been accepted and your College has been granted permission to conduct the course on the following conditions:

Details of the Course

Sr. No.	Name of the Course	Name of Course Coordinator	Duration	Credit	No. of Candidates to be admitted	Fees to be Charged per Student	Fees to be Deposited With the Deptt.
1.	Certificate Course in Biofertilizer and Biopesticide Production.	Dr. Pranita.B. Gulhane.	45 hrs. T-37 hrs. P-08 hrs.	2	80	500/-	10%
2.	Certificate Course in Ground Water Exploration.	Dr. P .B . Zamarkar.	45 hrs. T-36 hrs. P-09 hrs.	2	100	500/-	10%
3.	Certificate Course in Mushroom Cultivation.	Dr. Rupali . H Mahakhode.	40 hrs. T-20 hrs. P-20 hrs.	2	80	500/-	10%
4.	Certificate Course in Fruit Processing and Wine Technology.	Dr. Pranita B. Gulhane.	45 hrs. T-37 hrs. P-8 hrs.	2	80	500/-	10%
5.	Certificate Course in Environment and water Management.	Dr. Priyadarshani N . Deshmukh.	45 hrs. T-30 hrs. P-15 hrs.	2	150	500/-	10%
6.	Certificate Course in Immunology and Immunodiagnostics .	Dr. Sapna. Baghel .	44 hrs. T-36 hrs. P-08 hrs.	2	80	500/-	10%

Rules & Regulations of this Department regarding these courses should be strictly followed.

1. **This sanction is valid for this particular Batch only.**
2. Fees for the course should be charged as per the norms prescribed.
3. Expenditure on the course should be incurred as per norms.
4. Course should be started within a Month from the date of sanction. Please communicate your acceptance within a month and submit the Initial Report
5. Submit the List of Students admitted in the excel format attached herewith.
6. Geotagged Photographs clicked during theory and practical classes have to be submitted along with the final report. Other than geotagged photographs will not be accepted.
7. Complete details and evidences (along with geotagged photographs) for theory & pratical exam / assessment will have to be submitted. Guidelines for allottment of grades should be strictly followed.
8. After Completion of the course the dates for assessment /exam should be informed to the Department at least 10 days in advance.

Your's faithfully,

26/10/23
Director

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

NOTICE
(SKILL BASE COURSES)

Date : 01/02/2024

All the UG and PG students are hereby informed that, every year our college provide opportunities to the students to learn the short-term skill base courses. The college runs these skill base courses in collaboration with Department of Lifelong Learning and Extension, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

The skill base courses play an important role in the future career of the students during their job opportunities. The students having the skill base course certificates are given preference in the jobs during the interviews in corporate and government sectors.

Our college has prepared 08 skill base courses of different skills. The period of each course is 45 hours (per week 3 lectures) online or offline including offline practical. College conducts the examination of all skill base courses as per university norms.

The college has fixed the minimum fee of Rs. 500/- (Rs. Five Hundred Only) so that all students get enrolled for the same.

These certificate courses not only add value to the student but also awards credit to the student.

All students are informed to enroll for any one course from the following list. For details contact with concerned coordinators.

Last Date of Admission will be 24/02/2024.

List of Courses

S.No.	Name of Skill base course	Coordinator	Seats alloted	Fee.
1	Certificate Course in IPR Fundamentals	Dr. Sarang Dhote, Dept. of Chemistry.	100	Rs.500/-
2	Certificate Course in Web Technology	Dr. J. K. Keche, Dept. of Computer Science.	150	Rs.500/-
3	Biofertilizer and Biopesticide Production	Dr. Mrs. Pranita Gulhane, Dept. of Microbiology	80	Rs.500/-
4	Ground Water Exploration	Dr. Ms. P. B. Zamarkar Dept. of Geology.	100	Rs.500/-
5	Mushroom Cultivation	Dr. Mrs. Rupali Mahakhode, Dept. of Botany	80	Rs.500/-
6	Fruit Processing and Wine Technology	Dr. Mrs. Pranita Gulhane, Dept. of Microbiology	80	Rs.500/-
7	Environment and Water Management	Dr. Ms. Priyadarshini Deshmukh Dept. of Chemistry	150	Rs.500/-
8	Immunology and Immunodiagnostics.	Dr. Ms. Sapna Baghel, Dept. of Biotechnology	80	Rs.500/-

Science College, Congress Nagar, Nagpur SEAL

(Dr. M. P. Dhore)
Principal,
Science College,
Congress Nagar, Nasgpur

Copy to :
01) Concerned coordinators

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

IN COLLABORATION WITH

SHRI SHIVAJI SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR- 12

Certificate Course in Environmental and Water Management

The skill-based Certificate course syllabus for B.Sc. I, II, III appearing student is 15 weeks Certificate Course in Environmental and Water Management. The examination of the Course shall comprise of theory paper of 1 hour carrying 60 marks (MCQ based) and a practical of 3 hours duration carrying 40 marks (Practical Journal + Practical Exam + Project report). Candidates are expected to pass separately in the Theory and Practical examinations.
The student requires 40% marks in theory for passing including the project marks. Separate passing in practical examination is required.

The distribution of marks is also displayed in the following table.

Course	Theory Papers and Practical	Total Marks	
		Theory(MCQ) Marks	Practical Marks
Certificate Course in Environmental and Water Management	Theory paper- Computational Chemistry in Separation Science * Theory examination will be of MCQ pattern having 25 questions each question carries 2 equal marks. + 10 Marks Assingment.	60	40
	* Practical examination will be based on performance evaluation in the laboratory (Journal + Project report + practical exam)	100 Marks	

Based on Students' attendance and performance in Practical, Theory, Assignment, Journal, and Project report.

Course Coordinator
Dr.P.N.Deshmukh

TTIME –TABLE Environmental and water management- 23-24

Day	Sem	Class	1	2	3	4	5	6	7	8	9	10	11	12
Monday / Tuesday	Sem II	A + D				CHEM= PD						CHEM M1+B5=SSD(M)+PD(T)		
		C				CHE - C7 = RAD								
		E	CHEM B6 =PK						CHEM PK/SVD			CHEM M1+B5=SSD+PD(T)		
	Sem IV	A + D				CHE - M1, M2 = JKG(M)+SVD+VK			CHE-C7-RUK					
		C			CHE–SSD									
		E				CHE-B5B6-PPK				CHE-B1-PPK				
	Sem VI	A + D					CHEM-RDU		CHE G1G2=PSU+RDU					
		C				CHE,YKM			CHE - B2B3 = JKG(T)+SSD+PD(M)+SVD(M)					
		E				CHE,YKM								
Wednsday/ Thursday	Sem II	A + D		CHE-PD/JKG					CHE -G1G2G3 =RDU(T)+RAD					
		C		CHE-.RAD/SVD					CHEB1B2. RUK,+PD+JKG(W)YKM(T)					
		E			CHE,SVD/RAD									
	Sem IV	A + D	CHE-G2-VK			CHEM,RUK/VK								
		C	CHE - B3B4 = SSD+PPK(T)			CHEVK/,PD								
		E				CHEVK/PD						Certificale CourseEWM (Wed + Thus) 3.12 – 4.12		
	Sem VI	A + D		CHE,RDU/PSU										
		C				CHE -G3B1 = YKM+PSU+SVD(W)			Che,YKM/SSD					
		E				CHE -B5B6 =PK			CHE,PPK					
Frisday/ Saturday	Sem II	A + D			CHE.JKG				CHE - M2 = SVD					
		C				CHE.SVD			CHE - B3B4 = RUK+PSU(F)+SSD(S)					
		E					CHE.PPK							
	Sem IV	A + D	CHE–VK			CHE -G1G3 = YKM+PD								
		C			CHE–PD/SSD	CHE - B1B2 = VK+JKG+RUK(F)/RAD(F)						Certificale CourseEWM (Friday) 3.12 — 4.12		
		E			CHE–PD/SSD									
	Sem VI	A + D	CHE - M1, M2 =RAD+PK			CHE-PSU								
		C	CHE -B4= RDU			CHE-SSD								
		E				CHE--SSD								

Course-Coordinator.

Shri Shivaji Education Society Amravati's

Science College Nagpur

Skill-Base Course

Attendance for Certificate Course

Environmental and Water Management

Sr. No.	Name of Students	20/3/24	21/3/24	22/3/24	23/3/24	27/3/24	28/3/24	3/4/24	4/4/24	5/4/24	10/4/24
		Date & Theory / Practical									
1	Amit D. Shinde.										
2	Shreya Wankhede	Shs	Shs	Shs	Shs	Shs	Shs	Shs	Shs		Shs
3	Rakhi Chavhan	Rch.	Rch	Rchavan	Rchavan	Rchavan	Rchavan	Rchavan	Rchavan	Rchavan	Rchavan.
4	Akanksha Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade
5	Shivani Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade
6	Himani Maske	Himani	Himani	Himani	Himani	Himani	Himani	Himani	Himani	Himani	Himani
7	Aditi Sangeedar	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi
8	Anjali Yadav	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali
9	Darshana Kuhike	Dkuhike	Dkuhike	Dkuhike	Dkuhike	Dkuhike	Dkuhike	Dkuhike	Dkuhike	Dkuhike	Dkuhike
10	Kalyani Satare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare
11	Gayatri Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise
12	Sangita Suthar	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita
13	Manisha Dehankar										
14	Darshika Nipane										
15	Aryan Motghare										
16	Aliya Alam										
17	Ishika Todase	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika
18	Vanushka Khore	Vanushka	Vanushka	Vanushka	Vanushka	Vanushka	Vanushka	Vanushka	Vanushka	Vanushka	Vanushka
19	Netra Raut	Raut	Raut	Raut	Raut	Raut	Raut	Raut	Raut	Raut	Raut
20	Siddhi Bodhalkar	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi
21	Nandini Wadaskar	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini
22	Siddhi Godse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse
23	Tanushree Zunzunkar	Tanushree	Tanushree	Tanushree	Tanushree	Tanushree	Tanushree	Tanushree	Tanushree	Tanushree	Tanushree
24	Shruti Mohadikar	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti
25	Utkarsha Kothe	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha
26	Niveda Kusram										
27	Riya V. Singh										
28	Madhavi. D Gurnule										
29	Pradnya Wasnik										
30	Avantika Sonkusare										
31	Sarika Bokade	Bokade	Bokade					Bokade			
32	Tilak Gannade										
33	Yash Rampalwar										
34	Vasu Madekar.										
35	U										
36	Anushka Palandurkar.	AP.	AP	AP	AP	AP	AP	AP	AP.		AP
37	Shreya R. Gupta										
38	Yash Dorle	YAH	YAH	YAH	YAH	YAH	YAH	YAH	YAH		YAH
39	Mansi S. Gajjelwar	Mansi	Mansi	Mansi	Mansi	Mansi	Mansi	Mansi	Mansi		Mansi

should be strictly followed.

Shri Shivaji Education Society Amravati's

Science College Nagpur

Skill-Base Course

Attendance for Certificate Course

Environmental and Water Management

Sr. No.	Name of Students	12/4/24	18/4/24	19/4/24	24/4/24	25/4/24	26/4/24	2/5/24	3/5/24	8/5/24
		Date & Theory / Practical								
		5/4/24	6/4/24	10/4/24	12/4/24	13/4/24	17/4/24	19/4/24	20/4/24	24/4/24
1	Amit D. Shinde.									
2	Shreya Wankhede									
3	Rakhi Chavhan	Rchavhan	Rchavhan	Rchavhan	Rchavhan	Rchavhan	Rchavhan	Rchavhan	Rchavhan	Rchavhan
4	Akanksha Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade	A.S.Zade
5	Shivani Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade
6	Himani Maske	Himani	Himani	Himani	Himani	Himani	Himani	Himani	Himani	Himani
7	Aditi Sangewar	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi
8	Anjali Yadav	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali
9	Darshana Kulike	Kulike	Kulike	Kulike	Kulike	Kulike	Kulike	Kulike	Kulike	Kulike
10	Kalyani Satare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare	Ksatare
11	Gayatri Bhise	G.R.Bhise	G.R.Bhise	G.R.Bhise	G.R.Bhise	G.R.Bhise	G.R.Bhise	G.R.Bhise	G.R.Bhise	G.R.Bhise
12	Sangita Suthar	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita
13	Manisha Dehankar									
14	Darshika Nipane									
15	Aryan Hatgnare									
16	Aliya Alam									
17	Ishika Todase	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika
18	Vanushka ahare	Vanu	Vanu	Vanu	Vanu	Vanu	Vanu	Vanu	Vanu	Vanu
19	Netra Raut	Raut	Raut	Raut	Raut	Raut	Raut	Raut	Raut	Raut
20	Siddhi Reddhalwar	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi
21	Nandini Wadaskar	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini
22	Siddhi Godse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse	Sgodse
23	Tanushree Zanzad									
24	Shruti Mohadikar	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti
25	Utkarsha Kolte	Utkarsh	Utkarsh	Utkarsh	Utkarsh	Utkarsh	Utkarsh	Utkarsh	Utkarsh	Utkarsh
26	Niveditta Kusram	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi
27	Riya V. Singh									
28	Madhavi D Gedmule									
29	Pradnya Wasnik									
30	Avantika Sonkuwar									
31	Sunita Bokade	Bokade		Bokade			Bokade		Bokade	Bokade
32	Jibk Gomade									
33	Yash Sampatwar									
34	Vasu Madekar									
35	Anushka Palandurkar									
36	Shreya R. Gupta									
37	YASH DOKLE									
38	Mansi Gorjelwar									
39										

Shri Shivaji Education Society Amravati's

Science College Nagpur

Skill-Base Course

Attendance for Certificate Course

Environmental and Water Manegement

Sr. No.	Name of Students	9/5/24	10/5/24	15/5/24	17/5/24	22/5/24	24/5/24	29/5/24	30/5/24	31/5/24
		Date & Theory / Practical								
		25/4/24	26/4/24	27/4/24	2/5/24	3/5/24	4/5/24	8/5/24	9/5/24	6/5/24
1	Amit D. Shinde									
2	Shreya Wankhede									
3	Rakhi Chavhan									
4	Akanksha Zade									
5	Shivani Khorgade									
6	Himani Mestre									
7	Anjali Yadav									
8	Darshana Kuhike									
9	Kalyani Satare									
10	Gayatri Bhise									
11	Sahgita Suthar									
12	Adarsh Devankar									
13	Aditi Sangewar									
14	Darshika Nipane									
15	Aryan Motghare									
16	Aliya Ham									
17	Ishika Todase									
18	Vanushka Ghare									
19	Netra Raut									
20	Siddhi Buddhakar									
21	Nandini Wadaskar									
22	Siddhi Gadse									
23	Tanushree Zinzurkar									
24	Shruti Mahadikar									
25	Utkarsha Kothe									
26	Nivedita Kusram									
27	Riya V. Singh									
28	Madhavi Gudmule									
29	Sanika Bokade									
30	Tilak Gannade									
31	Yash Jampalwar									
32	Vasu Madekar									
33	Avantika Somkuwar									
34	Pradnya Wasnik									
35	Anushka Palandurkar									
36	Shreya R. Gupta									
37	YASH DOKLE									
38	Mayuri S. Wanjekar									
39										

Shri Shivaji Education Society Amravati's

Science College Nagpur

Skill-Base Course

Attendance for Certificate Course

Environmental and Water Manegement

Sr. No.	Name of Students	Date & Theory / Practical								
		5/6/24	6/6/24 P.	17/6/24	12/6/24	13/6/24	14/6/24	19/7/24	20/6/24	21/6/24 P
		11/6/24	20/3/24	21/3/24	22/3/24	23/4/24	27/4/24	28/3/24	30/3/24	8/4/24
1	Amit D. Shinde									
2	Shreya Wankhede									
3	Rakhi Chavan									
4	Akanksha Zade									
5	Shivani Khorgade									
6	Himani D. Mahe									
7	Anjali R. Yadav									
8	Darshna Kumre									
9	Kalyani Satone									
10										
11	Gayatri Bhise									
12	Sangita Suthar									
13	Manisha Dehankar									
14	Aditi Sangewar									
15										
16	Aliya Alam									
17	Ishika Todase									
18	Vanushree Ahore									
19	Netra Raut									
20	Darshika Nipane									
21	Nandini Wadaskar									
22	Siddhi Godse									
23	Pradnya Wasnik									
24	Avantika Soulkar									
25	Utkarsha Kathe									
26	Nivedita Kusram									
27	Riya. V. Singh									
28	Madhavi Gwarkar									
29										
30										
31	Sanika. Bokde									
32	Tilak. A. Gamade									
33	Yash R. Tumpalwar									
34	Vasu Madankar									
35	Anushka Palandurkar									
36	Shreya R. Gupta									
37	YASH DOKE									
38	Shruti Mohadikar									
39	Mansi Gajelwar									

Siddhi Buddhalwar

Shri Shivaji Education Society Amravati's

Science College Nagpur

Skill-Base Course

Attendance for Certificate Course

Environmental and Water Manegement

Sr. No.	Name of Students	Date & Theory / Practical									
		26/6/24	27/6/24	28/6/24	3/7/24	4/7/24	5/7/24	10/7/24	11/7/24	12/7/24	
		4/4/24	5/4/24	6/4/24	10/4/24	12/4/24	13/4/24	17/4/24	19/4/24	20/4/24	
1	Amit D. Shinde										
2	Shreya Wankhede										
3	Rakhi Chavan										
4	Akanksha Zade	A.S.zade	A.S.zade	A.S.zade	A.S.zade	A.S.zade	A.S.zade	A.S.zade	A.S.zade	A.S.zade	
5	Shivani Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	S.V.Khorgade	
6	Himani D. Maske										
7	Anjali R. Yadav	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	Anjali	
8	Darshana Kuhike										
9	Kalyani Satave	Ksatave	Ksatave	Ksatave	Ksatave	Ksatave	Ksatave	Ksatave	Ksatave	Ksatave	
10											
11	Gayatri Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	G.K.Bhise	
12	Sangita Suthar	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	Sangita	
13	Manisha Dehankar										
14	Aditi Sangewar	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	Aditi	
15											
16	Aliya Alam										
17	Ishika Todase	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	Ishika	
18	Vanishka Ghore	Vanishka	Vanishka	Vanishka	Vanishka	Vanishka	Vanishka	Vanishka	Vanishka	Vanishka	
19	Netra Raut										
20	Darshika Nipane										
21	Nandini Wadaskar	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	Nandini	
22	Siddhi Ingole	Ingole	Ingole	Ingole	Ingole	Ingole	Ingole	Ingole	Ingole	Ingole	
23	Pradnya Wasnik										
24	Vaishnavi Sonkusare										
25	Utkarsha Keche	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	Utkarsha	
26	Nivedita Kusram	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi	Nivi	
27	Riya V. Singh										
28	Madhavi Gurnule										
29											
30											
31	Sanika Bokde										
32	Tilak A. Gannat										
33	Yash R. Jampalwar										
34	Vasu Madekwar										
35	Anushka Palandurkar										
36	Shreya R. Gupta										
37	Yash Doke	Yash	Yash	Yash	Yash	Yash	Yash	Yash	Yash	Yash	
38	Shruti Mahadikar	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	Shruti	
39	Mansi Gajjalwar	Mansi	Mansi	Mansi	Mansi	Mansi	Mansi	Mansi	Mansi	Mansi	
	Siddhi Buddhalwar	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	Siddhi	

should be strictly followed.

8. After Completion of the course the dates for assessment /exam should be informed to the Department at teast 10 days in advance.

Your's faithfully,

for Director

26/10/23

S. S. E. S. Amt's Science College, Congress Nagar, Nagpur-12
Exam schedule of RTMNU, DLLE Skill Base Courses 2023-2024
Time Table

S. N.	Name of skill base Certificate course	Date of Exam	Name of Invigilators	Time	Room No.	Name of Course Coordinator
1	Ground Water Exploration	10/07/2024	Ms. Mansi Borkar, Dr. Lankesh Bhaisare, Ms. Sarika Tekade	11.00 AM to 12.30 PM	C5, C6, C7, C8, C9 C10.	Dr. Ms. Pushpa Zamarkar
2	Environment and Water Management	11/07/2024	Ms. Pallvi Butle, Ms. Ankita Manapure, Ms. Anjali Pogade			Dr. Ms. P. N. Deshmukh
3	Web Technology	12/07/2024	Dr. Ms. Puja Dhade, Dr. Ms. Versha Pande, Ms. Achala Waghmare, Ms. Priya Gaidhane, Ms. Payal Talekar, Ms. Aishwrya Zure			Dr. J. k. Keche
4	Fruit processing and wine technology	13/07/2024	Dr. Lankesh Bhaisare, Ms. Mansi Gawande, Ms. Shruti Agrawal, Ms. Piyush Sharma, Ms. Pallvi Butle.			Dr. Mrs. Pranita Gulhane
5	Biofertilizers and biopesticides	15/07/2024	aa Ms. Mansi Borkar, Ms. Sapna Bhaghel, Sarika Tekade, Ms. Ankita Manapure			Dr. Mrs. Pranita Gulhane
6	Immunology and immunodiagnostics	16/07/2024	Ms. Payal Talekar, Ms. Sapna Bhaghel, Ms. Sarika Tekade, Ms. Tinku Kumar			Dr. Mrs. Pranita Gulhane
7	Mushroom cultivation	18/07/2024	Dr. Piyush Sharma, Ms.Aishwrya Zure, Ms. Pallvi Butle.			Dr. Mrs. Rupali Mahakhode
8	Chemicals and Instrumental analysis…….Minerals	19/07/2024	Ms. Khushboo Sheikh, Ms. Shubhangi Kene, Dr. Shilpa Katre, Ms. Sarika Tekade			Dr. Mrs. Vrushali Kinhikar

*All invigilators are informed to report the concerning course coordinators at given date at 10.30 AM.

*All course coordinators are informed that whose practical examinations are not conducted, they have to conduct their concerning practical examinations on same day of theory exam papers after 1.30 pm

*Please make one desk bench one student seating arrangement for the same. We are using 06 class rooms for the examinations.

Conege.
Director of RTMNU, DLLE, courses
(Prof. A. D. Bobdey)

Principal
SSES Amt's Science College
Congress Nagar, Nagpur-12

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

Department of Chemistry

Certificate Course in Environment and Water Management

Session: 2023-24

Practical Attendance

Date: 11/07/2024

Sr. No.	Name of the Student	Signature
1	YASH SUNIL DORLE	
2	SIDDHI V. BUDDALWAR	
3	SHREYA D.WANKHEDE	
4	NETRA RAUT	
5	DARSHIKA NIPANE	
6	NANDINI WADASKAR	
7	ANUSHKA PALANDURKAR	
8	SHRUTI P.MOHADIKAR	
9	HIMANI MASKE	
10	DARSHNA KUHIKE	
11	AVANTIKA SOMKUWAR	
12	GAYATRI BHISE	
13	PRADNYA WASNIK	
14	ALIYA ALAM	
15	SANGITA SUTHAR	
16	SIDDHI M.GODSE	
17	MANISHA DEHANKAR	
18	ARYAN MOTGHARE	
19	TILAK GONNADE	
20	TANUSHREE ZUNZUNKAR	
21	YASH RAKESH JAMPALWAR	
22	VANUSHKA GHORE	

23	ADITI SANGEWAR	
24	KALYANI G .SATARE	
25	ANJALI R. YADAV	
26	ISHIKA S.TODASE	
27	AKANKSHA.S.ZADE	
28	UTKARSHAV. KOTHE	
29	SHIVANI.V.KHORGADE	
30	RAKHI.B.CHAVAN	
31	SANIKA.M.BOKADE	
32	RIYA.V.SINGH	
33	MADHAVI.D.GURNULE	
34	MANSI.S.GARJELWAR	
35	AMIT.D.SHIDE	
36	NIVEDITA .S.KUSRAM	
37	VASU.P.MADEKAR	
38	SHREYA.R.GUPTA	

should be strictly followed.

8. After Completion of the course the dates for assessment /exam should be informed to the Department at teast 10 days in advance.

Your's faithfully,

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

Department of Chemistry

Certificate Course in Environment and Water Management

Session: 2023-24

Theory Attendance Date: 11/07/2024

Sr. No.	Name of the Student	Signature
1	YASH SUNIL DORLE	
2	SIDDHI V. BUDDALWAL	
3	SHREYA D.WANKHEDE	
4	NETRA RAUT	
5	DARSHIKA NIPANE	
6	NANDINI WADASKAR	
7	ANUSHKA PALANDURKAR	
8	SHRUTI P.MOHADIKAR	
9	HIMANI MASKE	
10	DARSHNA KUHIKE	
11	AVANTIKA SOMKUWAR	
12	GAYATRI BHISE	
13	PRADNYA WASNIK	
14	ALIYA ALAM	
15	SANGITA SUTHAR	
16	SIDDHI M.GODSE	
17	MANISHA DEHANKAR	
18	ARYAN MOTGHARE	
19	TILAK GONNADE	
20	TANUSHREE ZUNZUNKAR	
21	YASH RAKESH JAMPALWAR	
22	VANUSHKA GHORE	
23	ADITI SANGEWAR	
24	KALYANI G .SATARE	

should be strictly followed ... have to be submitted. Guidelines for allotment of grades

25	ANJALI R. YADAV	Anjali.
26	ISHIKA S.TODASE	Ishika
27	AKANKSHA.S.ZADE	A.S.Zade
28	UTKARSHAV. KOTHE	Utkarsh
29	SHIVANI.V.KHORGADE	S.V.Khorgade
30	RAKHI.B.CHAVAN	Rakhi
31	SANIKA.M.BOKADE	Bokade
32	RIYA.V.SINGH	Riya
33	MADHAVI.D.GURNULE	Gurnule
34	MANSI.S.GARJELWAR	Mansi
35	AMIT.D.SHIDE	
36	NIVEDITA .S.KUSRAM	
37	VASU.P.MADEKAR	V.Madekar.
38	SHREYA.R.GUPTA	

Course Coordinator
Dr.P.N.Deshmukh

Mrs. Pallavi N. Butle

Ms. Anjali S. Pogade

Ms. Ankita S. Manapure

should be strictly followed

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY
(Established by Government of Central Provinces Education Department by Notification No. 513 dated the 1st of August 1923 & presently a State Universities governed by Maharashtra Universities Act No. VI of 2017)
DEPARTMENT OF LIFELONG LEARNING AND EXTENSION
Guru Nanak Bhavan, University Campus, Amravati Bypass Road, Nagpur – 440033 Phone: 2530800
Dr. Nishikant Raut,(Director) Mob. No. 9422803768

No.DOLLE/464/23
Dated : 26. 10. 2023

To,
The Principal
SSES Amravati' s Science
College , Congress Nagar,
Nagpur.

Subject : Sanction for Conducting Short Term Courses under Jeevan Shikshan Abhiyan on No Grant Basis. (2023-24)

Sir/Madam,

With reference to your proposal for conducting Short Term courses indicated below under Jeevan Shikshan Abhiyan of this Department, this is to inform you that your proposal has been accepted and your College has been granted permission to conduct the course on the following conditions:

Details of the Course

Sr. No.	Name of the Course	Name of Course Coordinator	Duration	Credit	No.of Candidates to be admitted	Fees to be Charged per Student	Fees to be Deposited With the Deptt.
1. 35	Certificate Course in Biofertilizer and Biopesticide Production.	Dr. Pranita.B. Gulhane.	45 hrs. T-37 hrs. P-08 hrs.	2	80	500/-	10%
2.	Certificate Course in Ground Water Exploration.	Dr. P .B . Zamarkar.	45 hrs. T-36 hrs. P-09 hrs.	2	100	500/-	10%
3. 19	Certificate Course in Mushroom Cultivation.	Dr. Rupali . H. Mahakhode.	40 hrs. T-20 hrs. P-20 hrs.	2	80	500/-	10%
4. 47	Certificate Course in Fruit Processing and Wine Technology.	Dr. Pranita B. Gulhane.	45 hrs. T-37 hrs. P-8 hrs.	2	80	500/-	10%
5. 13	Certificate Course in Environment and water Management.	Dr. Priyadashani N . Deshmukh.	45 hrs. T-30 hrs. P-15 hrs.	2	150	500/-	10%
6. 36	Certificate Course in Immunology and Immunodiagnostics .	Dr. Sapna. Baghel .	44 hrs. T-36 hrs. P-08 hrs.	2	80	500/-	10%

Rules & Regulations of this Department regarding these courses should be strictly followed.

1. **This sanction is valid for this particular Batch only.**
2. Fees for the course should be charged as per the norms prescribed.
3. Expenditure on the course should be incurred as per norms.
4. Course should be started within a Month from **the date of sanction.** Please communicate your acceptance within **a month and submit the Initial Report**
5. **Submit the List of Students admitted in the excel format attached herewith.**
6. **Geotagged Photographs clicked during theory and practical classes have to be submitted along with the final report. Other than geotagged photographs will not be accepted.**
7. **Complete details and evidences (along with geotagged photographs) for theory & pratical exam / assessment will have to be submitted. Guidelines for allottment of grades should be strictly followed.**
8. **After Completion of the course the dates for assessment /exam should be informed to the Department at teast 10 days in advance.**

Your's faithfully,

26/10/23

for Director

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

IN COLLABORATION WITH

SHRI SHIVAJI SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR- 12

Certificate Course in Environmental and Water Management

The skill-based Certificate course syllabus for B.Sc. I, II, IIl appearing student is 15 weeks Certificate Course in Environmental and Water Management. The examination of the Course shall comprise of theory paper of 1 hour carrying 60 marks (MCQ based) and a practical of 3 hours duration carrying 40 marks (Practical Journal + Practical Exam + Project report). Candidates are expected to pass separately in the Theory and Practical examinations.
The student requires 40% marks in theory for passing including the project marks. Separate passing in practical examination is required.

The distribution of marks is also displayed in the following table.

Course	**Theory Papers and Practical**	**Total Marks**	
		Theory(MCQ) Marks	Practical Marks
Certificate Course in Environmental and Water Management	Theory paper- Computational Chemistry in Separation Science * Theory examination will be of MCQ pattern having 25 questions each question carries 2 equal marks. + 10 Marks Assingment.	60	40
	* Practical examination will be based on performance evaluation in the laboratory (Journal + Project report + practical exam)	100 Marks	

Based on Students' attendance and performance in Practical, Theory, Assignment, Journal, and Project report**.**

Course Coordinator
Dr.P.N.Deshmukh

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

Department of Chemistry

Certificate Course in Environment and Water Management

Session: 2023-24

Statement of Marks:

Sr. No	Name of Student	Theory = 60	Practical = 40	Total Marks	Grade
1	YASH SUNIL DORLE	59	39	98	O
2	SIDDHI V. BUDDALWAL	46	37	83	A+
3	SHREYA D.WANKHEDE	25	25	50	C
4	NETRA RAUT	64	35	99	O
5	DARSHIKA NIPANE	43	39	82	A+
6	NANDINI WADASKAR	27	32	59	B
7	ANUSHKA PALANDURKAR	61	23	84	A+
8	SHRUTI P.MOHADIKAR	41	20	61	B+
9	HIMANI MASKE	37	33	70	B+
10	DARSHNA KUHIKE	56	29	85	A+
11	AVANTIKA SOMKUWAR	34	15	49	C
12	GAYATRI BHISE	34	36	70	B+
13	PRADNYA WASNIK	46	34	80	A
14	ALIYA ALAM	59	27	86	A+
15	SANGITA SUTHAR	34	20	54	B
16	SIDDHI M.GODSE	41	38	79	A
17	MANISHA DEHANKAR	44	15	59	B
18	ARYAN MOTGHARE	32	31	63	B+
19	TILAK GONNADE	40	30	70	A+
20	TANUSHREE ZUNZUNKAR	31	19	50	C
21	YASH RAKESH JAMPALWAR	34	34	68	B+
22	VANUSHKA GHORE	42	19	61	B+
23	ADITI SANGEWAR	36	24	60	B
24	KALYANI G .SATARE	46	12	58	B
25	ANJALI R. YADAV	37	32	69	B+
26	ISHIKA S.TODASE	59	39	78	A
27	AKANKSHA.S.ZADE	30	37	67	B+

28	UTKARSHAV. KOTHE	36	25	61	B+
29	SHIVANI.V.KHORGADE	45	20	65	B+
30	RAKHI.B.CHAVAN	41	19	60	B
31	SANIKA.M.BOKADE	41	28	69	B+
32	RIYA.V.SINGH	59	30	89	A+
33	MADHAVI.D.GURNULE	40	35	75	A
34	MANSI.S.GARJELWAR	40	29	69	B+
35	AMIT.D.SHIDE	48	37	85	A+
36	NIVEDITA .S.KUSRAM	51	27	78	A+
37	VASU.P.MADEKAR	39	35	74	A+
38	SHREYA.R.GUPTA	41	34	75	A

Course Coordinator
Dr.P.N.Deshmukh

Shri Shivaji Education Society Amravati's

Science College

Congress Nagar, Nagpur

Skill Base Course (2023 – 2024)

Certificate Course in Environment and Water Management

Notice

All students enrolled in the Environment and Water Management Certificate Course are notified that they must attend the exam on July 11, 2024. On the same day, there is a theory and practical examination.

Schedule:
Theory Examination: 11:30 AM – 12:30 PM

Practical Examination: 1:00 PM – 4:00 PM

Course Coordinator
Dr.P.N.Deshmukh

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

Department of Chemistry

Certificate Course in Environment and Water Management

Session: 2023-24

Assignment

Each Question carries 5 marks. Total Marks – 10 M

Q1. Primary, secondary, and tertiary treatment of water(Industrial and domestic).

Q2. Write a brief Note on sources of water pollution, classification of water pollutants based on their origin and chemical composition

Course Coordinator
Dr.P.N.Deshmukh

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

Department of Chemistry

Certificate Course in Environment and Water Management

Session: 2023-24

Time:-11.30-12.30 Marks:- 50 Marks

Solve any 25 questions. All questions carry 2 Marks.

---

1. What is the main cause of air pollution?

a) Natural sources

b) Human activities

c) Industrial processes

d) Vehicle emissions

2. Which pollutant is responsible for respiratory problems?

a) CO

b) SO2

c) NO2

d) PM2.5

3. What is smog composed of?

a) Only NO2 and PM2.5

b) Only SO2 and CO

c) NO2, SO2, PM2.5, and other pollutants

d) Only CO and O3

4. Which of the following is a effect of smog?

a) Increased visibility

b) Improved respiratory health

c) Reduced sunlight

d) None of the above

5. What is acid rain caused by?

a) Release of alkaline substances

b) Release of acidic substances

c) Natural processes only

d) None of the above

6. Which of the following is affected by acid rain?

a) Only aquatic life

b) Only forests

c) Both aquatic life and forests

d) Neither aquatic life nor forests

7. What is the main cause of global warming?

a) Burning fossil fuels

b) Deforestation

c) Methane emissions

d) All of the above

8. What is the Kyoto Protocol?

a) An agreement to reduce greenhouse gas emissions

b) An agreement to increase greenhouse gas emissions

c) A treaty to ban fossil fuels

d) None of the above

9. Which of the following is a consequence of global warming?

a) Increased biodiversity

b) Decreased sea levels

c) More frequent natural disasters

d) None of the above

10. What is the Paris Agreement?

a) A global agreement to reduce greenhouse gas emissions

b) A global agreement to increase greenhouse gas emissions

c) A treaty to ban renewable energy

d) None of the above

11. Which of the following is a way to reduce carbon footprint?

a) Using more fossil fuels

b) Increasing energy efficiency

c) Planting more trees

d) None of the above

12. What is the main cause of ozone layer depletion?

a) CFCs

b) CO2

c) Methane

d) Water vapor

13. Which of the following is an effect of ozone layer depletion?

a) Increased UV radiation

b) Decreased UV radiation

c) No impact on UV radiation

d) None of the above

14. What is the Montreal Protocol?

a) An agreement to reduce ozone-depleting substances

b) An agreement to increase ozone-depleting substances

c) A treaty to ban fossil fuels

d) None of the above

15. Which of the following is a way to reduce air pollution?

a) Increasing vehicle emissions

b) Using public transport

c) Burning more fossil fuels

d) None of the above

16. Which instrument is used to estimate toxic metals in water samples?

a) UV-Vis Spectrophotometer

b) Flame Atomic Absorption Spectrophotometer (FAAS)

c) Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

d) Gas Chromatograph

17. What are the health effects of chronic arsenic exposure?

a) Skin discoloration, nerve damage

b) Kidney damage, anemia

c) Respiratory problems, cancer

d) All of the above

18. Which toxic element can cause developmental and reproductive issues?

a) Lead

b) Cadmium

c) Chromium

d) Arsenic

19. What is the permissible limit of lead in drinking water?

a) 0.01 mg/L

b) 0.1 mg/L

c) 1 mg/L

d) 10 mg/L

20. Which analytical technique is used for the estimation of chromium in water samples?

a) FAAS

b) ICP-MS

c) UV-Vis Spectrophotometry

d) Electrothermal Atomic Absorption Spectroscopy (ETAAS)

21. What are the sources of cadmium exposure?

a) Smoking, contaminated food

b) Industrial waste, water pollution

c) Pesticides, soil contamination

d) All of the above

22. Which toxic element can cause respiratory problems and cancer?

a) Arsenic

b) Lead

c) Chromium

d) Cadmium

23. What is the water cycle also known as?

a) Hydrologic cycle

b) Water purification process

c) Evaporation process

d) Transpiration process

24. Which process occurs when water evaporates from the ocean and lakes?

a) Evaporation

b) Condensation

c) Transpiration

d) Precipitation

25. What is the term for water that seeps into the ground and becomes groundwater?

a) Infiltration

b) Percolation

c) Runoff

d) Evaporation

26. What is water pollution?

a) The presence of harmful substances in water

b) The absence of harmful substances in water

c) The presence of beneficial substances in water

d) The absence of beneficial substances in water

27. Which type of water pollution affects rivers, lakes, and oceans?

a) Surface water pollution

b) Groundwater pollution

c) Soil pollution

d) Air pollution

28. What is the main cause of water pollution?

a) Industrial waste

b) Agricultural runoff

c) Domestic waste

d) All of the above

29. Which industry is a major source of water pollution?

a) Agriculture

b) Manufacturing

c) Mining

d) All of the above

30. What is a common source of water pollution in agricultural areas?

a) Fertilizers

b) Pesticides

c) Manure

d) All of the above

Name Of Student:-

ESTIMATION OF pH

AIM:- To determine the pH of a given sample.

APPARATUS:- There are no makes and models available for pH meters operated by battery can also be obtained. The accuracy of the pH can vary from 0.01-0.1 depending on the make, some pH meters employ two electrodes, an indicator, glass electrodes, and a calomel electrodes, while others may a combined glass and reference electrodes. Most pH meter references also have a temperature compensation system to avoid the differences arising due to the different temperatures.

PRINCIPLE:-

pH is the negative log10 of the hydrogen ion concentration in a solution. It can be measured by colorimetric methods using various indicators or paper strips. However, the use of colorimetric methods is less convenient and less accurate. For accurate measurement of pH, electrometric methods are used employing the hydrogen ion sensitive electrodes.

PROCEDURE:-

The pH was measured directly by using P138 Water Quality Analyser.

RESULT:-

The pH.of the sample was found to be _____

1. What is the purpose of using a pH indicator in a titration experiment?

a) To change the pH of the solution

b) To indicate the endpoint of the titration

c) To measure the pH of the solution

d) To neutralize the solution

Answer: b) To indicate the endpoint of the titration

1. Which pH indicator is commonly used in acid-base titrations?

a) Litmus

b) Phenolphthalein

c) Methyl orange

d) Bromothymol blue

Answer: b) Phenolphthalein

1. What is the pH of the solution when phenolphthalein turns pink?

a) 3

b) 7

c) 8

d) 10

Answer: c) 8

1. How many mL of 0.1 M NaOH are required to titrate 50 mL of 0.1 M HCl?

a) 25 mL

b) 50 mL

c) 75 mL

d) 100 mL

Answer: b) 50 mL

1. What is the pH of the solution when the titration is complete?

a) 3

b) 7

c) 10

d) 12

Answer: b) 7

ESTIMATION OF CONDUCTIVITY

AIM:- To determine the conductivity of a given water sample.

APPARATUS:-Conductivity meter, Given sample, etc.

PRINCIPLE:- Electrical Conductance is the ability of the substance to conduct the electric current. In water, it is the property caused by the presence of various ionic species. It is generally measured with the help of a conductivity meter having a conductance cell containing electrodes of platinum coated with platinum black or carbon. These electrodes are mounted rigidly and placed parallel at a fixed distance. Conductance when measured between electrodes having a surface area of 1 cm^3 and placed at a distance of 1 cm is called electrical conductivity and is the property of a water sample rather than the measuring system. The term specific conductance is also used in place of electrical conductivity but is an obsolete term. The unit of conductivity measurement is Siemen(S)/ cm. The older unit mho/cm is now rarely used. The conductivity of most water is generally low so the unit uS/cm shall be much appropriate. As, the ionization of solutes depends upon the temperature, conventionally the result is reported at 25ºC.

PROCEDURE:-

The conductivity of the water sample was directly measured by using metallic electrodes of the P 138 Water Quality Analyser.

Take the sample in the beaker place the conductivity cell in it and measure the conductance, The conductivity cell is standardized by measuring the KCl solution.

CALCULATIONS:-

Cell Constant =

Conductivity =Observed conductance x Cell Constant

RESULT:-

The conductivity of the given sample was found to be

1. What is the unit of conductivity?

a) Siemens (S)

b) Ohms (Ω)

c) Amperes (A)

d) Volts (V)

Answer: a) Siemens (S)

1. Which of the following substances has the highest conductivity?

a) Distilled water

b) Tap water

c) Saltwater

d) Honey

Answer: c) Saltwater

1. What is the purpose of a conductivity probe?

a) To measure temperature

b) To measure pH

c) To measure conductivity

d) To measure turbidity

Answer: c) To measure conductivity

1. How does increasing the concentration of ions in a solution affect its conductivity?

a) Decreases conductivity

b) Increases conductivity

c) Has no effect on conductivity

d) Varies depending on the ion

Answer: b) Increases conductivity

1. Which of the following instruments is used to measure conductivity?

a) pH meter

b) Conductivity meter

c) Spectrophotometer

d) Potentiostat

Answer: b) Conductivity meter

ESTIMATION OF CHLORIDES

AIM: Estimate the Chloride content in the given water sample.

APPARATUS: Burette, pipette, conical flask, volumetric flask, etc.

CHEMICALS: Potassium Chromate, Silver Nitrate 0.02N

PRINCIPLE: Silver Nitrate reacts with chloride to form a very slightly soluble white precipitate of AgCl. At the endpoint when all the chloride gets precipitated, free silver ions react with chromate to form silver chromate of reddish-brown color.

PROCEDURE:

1) Take 25ml of the given water sample.
2) Add 2 ml potassium chromate.
3) Fill the burette with 0.02N $AgNO_3$
4) Titrate the given sample against $AgNO_3$ till we get a red precipitate of silver chromate and note down the endpoint.

FORMULA:

Chloride (mg/L)= $\frac{(\text{A ml of } AgNO_3 \text{ x N of } AgNO_3)X\ 1000\ X\ 35.5}{\text{Volume of sample}}$

Where,A= ml of $AgNO_3$ required

N= Normality of $AgNO_3$

Volume of sample=25

Well Water Sample	Volume of water sample	Volume of AgNo3(ml)	Mean
1			
2			

CALCULATIONS:

Chloride(mg\L)=$\frac{(\text{A ml of } AgNo_3 \text{ x N of } AgNo_3)x\ 1000\ x35.45}{\text{Volume of sample}}$

= [(x0.01)x35.45x1000]/50

= mg/L

Result:- Chloride content in the given sample is found to be mg/L

INTERPRETATION:

The observation value of chloride was found to be less than that of standard value, hence the given water sample can't be used for drinking and agriculture purposes.

1. What is the formula for chloride ion?

a) Cl+

b) Cl-

c) Cl2

d) ClH

Answer: b) Cl-

1. Which of the following is a source of chloride ions in water?

a) Sewage effluent

b) Industrial waste

c) Natural geological formations

d) All of the above

Answer: d) All of the above

1. What is the purpose of adding chlorine to drinking water?

a) To remove chlorides

b) To add chlorides

c) To disinfect and oxidize

d) To remove organic matter

Answer: c) To disinfect and oxidize

1. How does high levels of chlorides in water affect its taste?

a) Makes it sweet

b) Makes it bitter

c) Makes it salty

d) Makes it neutral

Answer: c) Makes it salty

1. Which method is commonly used to remove chlorides from water?

a) Reverse osmosis

b) Activated carbon filtration

c) Ion exchange

d) Distillation

Answer: a) Reverse osmosis

ESTIMATION OF ALKALINITY

Introduction : Alkalinity is the measure of the buffering capacity of water for the capacity of bases to neutralize acids. Measuring alkalinity is important determining a streams ability to neutralize the acid pollution from rainfall or waste water and alkalinity does not refer to pH but instead refer to the ability of water to resists change in pH . The presence of buffering material helps in neutralizing acid as they are primarily the bases that is carbonate and bicarbonates.Alkalinity not only helps to regulate the PH of water body. But also the metal content. Bicarbonates and carbonates ion in water can remove toxic metal by precipitating metal out of solution.Water quality standards and other criteria regarding alkalinity, Because alkalinity varies greatly due to differences in geology, there are no general standards for alkalinity. Levels of 20-200mg/L are typical of freshwater. A total alkalinity level of 100-200mg/L will stabilize the pH level in stream. Level below 10mg/L indicates the system is poorly buffered and is susceptible to changes in pH from natural and human caused sources.

AIM: To determine alkalinity of given water sample.

APPARATUS: Conical flask, Burette, Burette stand, Beaker, etc.

PRINCIPLE: Total Alkalinity is the measure of the capacity of water to neutralise the strong acid. The alkalinity in water is generally imparted by the salts, Carbonate, Phosphate, Nitrate, Borates, Silicates, etc. Together with the hydroxyl ion in free state. However, most of them are rich in Carbonates and Bicarbonates with the little concentration of other alkalinity imparting ions.

Total Alkalinity, Carbonate and Bicarbonate can be estimated by titrating the sample with strong acid (HCL, Sulphuric acid), first to pH 8.3 using phenolphthalein as an indicator and then further to pH between 4.2 -5.4 with methyl orange or mixed indicator. In first case, the value is called as phenolphthalein Alkalinity (PA) and in second case, it is total Alkalinity (TA). Values of Carbonates and Bicarbonates and hydroxyl ion can be computed from these two types.

REAGENTS:

A. Sodium Hydroxide, 0.05N

B. Methyl Orange Indicator

C. Phenolphthalein indicator

PROCEDURE :

1) Take 25ml of colorless sample in a conical flask and add 2-3 drops of Methyl Orange.

2) If the solution turns yellow, the Methyl Orange acidity is absent. In case the content turns pink, titrate with 0.5N NaOH. At the end point, the color changes from pink to yellow.

3) Now add a few drops of phenolphthalein indicator to the same and titrate.

FORMULA :

Alkalinity (PA) as CaCO3mg/L=A×Normality of HCL×1000×50/ Volume of sample

Alkalinity (TA) as CaCO3mg/L= B×Normality of HCL×1000×50/ Volume of sample

Where A= volume of HCL used with only PA

B = Volume of HCl required with PA and M.O.

PA = Phenolphthalein alkalinity.

TA = Total alkalinity.

OBSERVATION:

Sr. no.	Volume of sample taken	Volume of H_2SO_4 Required	Constant reading

1.			
2.			
3.			

Calculation:

Phenolphthalein alkalinity (PA)=(A×N)×1000×50/ml of sample

= ---- x0.17x1000x50/25

= mg/L

Total Alkalinity (TA)=(B×N)×1000×50 /Vol of sample

= --- X0.17X1000X50/50

= mg/L

RESULT:

1. Phenolphthalein Alkalinity of the given sample was found to be mg/L

2. Total Alkalinity of the given sample was found to be mg/l

1. What is the purpose of titrating a water sample with hydrochloric acid in an alkalinity test?

a) To determine the pH of the sample

b) To determine the acidity of the sample

c) To determine the alkalinity of the sample

d) To determine the hardness of the sample

Answer: c) To determine the alkalinity of the sample

1. Which of the following indicators is commonly used in alkalinity titration?

a) Phenolphthalein

b) Methyl orange

c) Bromothymol blue

d) Litmus

Answer: a) Phenolphthalein

1. What is the endpoint of the titration in an alkalinity test?

a) When the pH reaches 7

b) When the pH reaches 8.3

c) When the color changes from pink to colorless

d) When the color changes from yellow to blue

Answer: c) When the color changes from pink to colorless

1. How does increasing the amount of hydrochloric acid added to the sample affect the alkalinity result?

a) Increases the alkalinity

b) Decreases the alkalinity

c) Has no effect on the alkalinity

d) Varies depending on the sample

Answer: b) Decreases the alkalinity

1. Which of the following units is commonly used to express alkalinity results?

a) mg/L as $CaCO_3$

b) mg/L as HCO_3

c) ppm as $CaCO_3$

d) ppm as HCO_3

Answer: a) mg/L as $CaCO_3$

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

Department of Chemistry

Certificate Course in Environment and Water Management

Session: 2023-24

Time:-11.30-12.30 11.7.2024 Marks:- 50 Marks

Answer Key(T)

1. What is the main cause of air pollution?

Answer: b) Human activities

2. Which pollutant is responsible for respiratory problems?

Answer: d) PM2.5

3. What is smog composed of?

Answer: c) NO2, SO2, PM2.5, and other pollutants

4. Which of the following is an effect of smog?

Ans; Reduce Sunlight

5. What is acid rain caused by?

Answer: b) Release of acidic substances

6. Which of the following is affected by acid rain?

Answer: c) Both aquatic life and forests

7. What is the main cause of global warming?

Answer: d) All of the above

8. What is the Kyoto Protocol?

Answer: a) An agreement to reduce greenhouse gas emissions

9. Which of the following is a consequence of global warming?

Answer: c) More frequent natural disasters

10. What is the Paris Agreement?

Answer: a) A global agreement to reduce greenhouse gas emissions

11. Which of the following is a way to reduce carbon footprint?

Answer: b) Increasing energy efficiency

12. What is the main cause of ozone layer depletion?

Answer: a) CFCs

13. Which of the following is a effect of ozone layer depletion?

Answer: a) Increased UV radiation

14. What is the Montreal Protocol?

Answer: a) An agreement to reduce ozone-depleting substances

15. Which of the following is a way to reduce air pollution?

Answer: b) Using public transport.

16. Which instrument is used to estimate toxic metals in water samples?

Answer: b) Flame Atomic Absorption Spectrophotometer (FAAS)

17. What are the health effects of chronic arsenic exposure?

Answer: d) All of the above

18. Which toxic element can cause developmental and reproductive issues?

Answer: b) Cadmium

19. What is the permissible limit of lead in drinking water?

Answer: b) 0.1 mg/L

20. Which analytical technique is used for the estimation of chromium in water samples?

Answer: b) ICP-MS

21. What are the sources of cadmium exposure?

Answer: d) All of the above

22. Which toxic element can cause respiratory problems and cancer?

Answer: a) Arsenic

23. What is the water cycle also known as?

Answer: a) Hydrologic cycle

24. Which process occurs when water evaporates from the ocean and lakes?

Answer: a) Evaporation

25. What is the term for water that seeps into the ground and becomes groundwater?

Answer: a) Infiltration

26. What is water pollution?

Answer: a) The presence of harmful substances in water

27. Which type of water pollution affects rivers, lakes, and oceans?

Answer: a) Surface water pollution

28. What is the main cause of water pollution?

Answer: d) All of the above

29. Which industry is a major source of water pollution?

Answer: d) All of the above

30. What is a common source of water pollution in agricultural areas?

Answer: d) All of the above

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

Department of Chemistry

Certificate Course in Environment and Water Management

Session: 2023-24

Time:-11.30-12.30 11.7.2024 Marks:- 50 Marks

Answer Key(P)

Aim: ESTIMATION OF pH

1. What is the purpose of using a pH indicator in a titration experiment?

Answer: b) To indicate the endpoint of the titration

2. Which pH indicator is commonly used in acid-base titrations?

Answer: b) Phenolphthalein

3. What is the pH of the solution when phenolphthalein turns pink?

Answer: c) 8

4. How many mL of 0.1 M NaOH are required to titrate 50 mL of 0.1 M HCl?

Answer: b) 50 mL

5. What is the pH of the solution when the titration is complete?

Answer: b) 7

Aim: ESTIMATION OF CONDUCTIVITY

1. What is the unit of conductivity?

Answer: a) Siemens (S)

2. Which of the following substances has the highest conductivity?

Answer: c) Saltwater

3. What is the purpose of a conductivity probe?

Answer: c) To measure conductivity

4. How does increasing the concentration of ions in a solution affect its conductivity?

Answer: b) Increases conductivity

5. Which of the following instruments is used to measure conductivity?

Answer: b) Conductivity meter

Aim: ESTIMATION OF CHLORIDES

1. What is the formula for chloride ion?

Answer: b) Cl-

2. Which of the following is a source of chloride ions in water?

Answer: d) All of the above

3. What is the purpose of adding chlorine to drinking water?

Answer: c) To disinfect and oxidize

4. How do high levels of chlorides in water affect its taste?

Answer: c) Makes it salty

5. Which method is commonly used to remove chlorides from water?

Answer: a) Reverse osmosis

Aim: ESTIMATION OF ALKALINITY

1. What is the purpose of titrating a water sample with hydrochloric acid in an alkalinity test?

Answer: c) To determine the alkalinity of the sample

2. Which of the following indicators is commonly used in alkalinity titration?

Answer: a) Phenolphthalein

3. What is the endpoint of the titration in an alkalinity test?

Answer: c) When the color changes from pink to colorless

4. How does increasing the amount of hydrochloric acid added to the sample affect the alkalinity result?

Answer: b) Decreases the alkalinity

5. Which of the following units is commonly used to express alkalinity results?

Answer: a) mg/L as CaCO3

ANALYSIS OF PHYSICO-CHEMICAL PARAMETERS OF WATER SAMPLE

Submitted To

Department of Chemistry

S.S.E.S. Amravati's Science College Congress Nagar,

Nagpur.

CERTIFICATE COURSE IN ENVIRONMENTAL AND WATER MANAGEMENT (2023-2024)

Co-ordinator

Dr.P.N.Deshmukh

Submitted by

Name:-

Section:

Semester: B.Sc (Sem-)

ABBREVIATIONS

Sr. no	ABBREVIATIONS	FULL FORMS
1.	WHO	World Health Oraganisation
	BSI	Bureau Of Indian Standards
3.	EBT	Eriochrome Black-T
4.	DO	Dissolved Oxygen
5.	EDTA	Ethylene Diamine Tetra Acetic Acid
6.	NaOH	Sodium Hydroxide
7.	$CaCO_3$	Calcium Carbonate
8.	pH	Hydrogen Potenz
9.	HCl	Hydrochloric Acid
10.	H_2SO_4	Sulphuric Acid
11.	$AgNO_3$	Silver Nitrate
12.	PA	Phenolphthalein Alkalinity [1]

INDEX

CERTIFICATE

This to certify that Ms/Mr---------- has completed the Certificate Course entitled "Certificate Course in Environment and Water Management"(Skill Based Course affiliated to RTM Nagpur University Nagpur (MS) in the session 2023-2024. It is an original project carried out under my guidance and supervision.

Dr. Priyadarshani Deshmukh

Course Co-ordinator

INTRODUCTION

Water is more than just water the existence of whole universe is dependent on water. That's why we called water is life. The primary reason is that every living element on Earth is consisting of approximately 65% to 70% of water in their body. Anyone can't think of life without water whether it is Plants, Animals, Humans, and other living things. Water is the most important resource. We require water for drinking, making foods, for cleaning out body and other household items, for constructions, paints etc.In spite of having 70% of water on earth but only 1% of water is fresh and usable and other 97% of water is salty, 2% of water is in the form of ice in the glaciers and icebergs. Nowadays, human beings are destroying the environment by wasting this 1% of clean water by various way i.e. Excessive use of required water, Throwing garbage into water bodies, Careless use of water in their various household works etc.The more waste of water is the more we are consuming our natural resources like fossil fuels for generating electricity which requires for making clean water Following are the main benefits of saving water.Less use of natural resources like Fossil fuels for making of fresh water. The more water we save, it will be use by the plants and animals. This helps to maintain balance the ecology.We should save water to avoid drought in the coming future. We should save water for its use in agriculture. We should save water for our future generations as one day it will be unavailable due to it is limited. Last but not least, we all should pledge that we must save water to save our earth.Water is one of the most important substances on earth. All plants and animals must have water to survive. If there was no water there would no life on earth. Water quality testing is an important part of environmental monitoring. When water quality is poor, it affects not only aquatic life but the surrounding ecosystem as well .The parameters that affect the quality of water in the environment can be physical, chemical or biological factors as follows:

Environmental indicators

- Water temperature
- Specific conductance or electrical conductance (EC) or conductivity
- Total suspended solids (TSS)
- Transparency or turbidity
- Total dissolved solids (TDS)
- Odour of water
- Color of water
- Taste of water

Chemicals indicators

- pH
- Biochemical oxygen demand (BOD)
- Chemical oxygen demand (COD)
- Dissolved oxygen (DO)
- Total hardness (TH)
- Heavy metals
- Nitrate
- Orthophosphates
- Pesticides
- Surfactants

These parameters are relevant not only to surface water studies of the ocean, lakes and rivers, but to groundwater and industrial processes as well.
Water quality monitoring can help researches to predict human impacts on an ecosystem. These measurement efforts can also assist in restoration projects or ensure environmental standards are being met.

Sampling Location:
SAMPLING:

- Rinse the bottle properly with distilled water.
- Now rinse the bottle with the sample, twice or thrice.
- Take the sample in the bottle.
- Measure the temperature of the water sample.
- Then determine the pH, conductivity, chloride content, etc.

TEMPERATURE

LOCATION	TEMPERATURE

ESTIMATION OF pH

AIM:- To determine the pH of a given sample.

APPARATUS:- There are no makes and models available for pH meters operated by battery can also be obtained. The accuracy of the pH can vary from 0.01-0.1 depending on the make, some pH meters employ two electrodes, an indicator, glass electrodes, and a calomel electrodes, while others may a combined glass and reference electrodes. Most pH meter references also have a temperature compensation system to avoid the differences arising due to the different temperatures.

PRINCIPLE:-

pH is the negative log10 of the hydrogen ion concentration in a solution. It can be measured by colorimetric methods using various indicators or paper strips. However, the use of colorimetric methods is less convenient and less accurate. For accurate measurement of pH, electrometric methods are used employing the hydrogen ion sensitive electrodes.

PROCEDURE:-

The pH was measured directly by using P138 Water Quality Analyser.

RESULT:-

The pH.of the sample was found to be _____

ESTIMATION OF CONDUCTIVITY

AIM:- To determine the conductivity of a given water sample.

APPARATUS:-Conductivity meter, Given sample, etc.

PRINCIPLE:- Electrical Conductance is the ability of the substance to conduct the electric current. In water, it is the property caused by the presence of various ionic species. It is generally measured with the help of a conductivity meter having a conductance cell containing electrodes of platinum coated with platinum black or carbon. These electrodes are mounted rigidly and placed parallel at a fixed distance. Conductance when measured between electrodes having a surface area of 1 cm^3 and placed at a distance of 1 cm is called electrical conductivity and is the property of a water sample rather than the measuring system. The term specific conductance is also used in place of electrical conductivity but is an obsolete term. The unit of conductivity measurement is Siemen(S)/ cm. The older unit mho/cm is now rarely used. The conductivity of most water is generally low so the unit uS/cm shall be much appropriate. As, the ionization of solutes depends upon the temperature, conventionally the result is reported at 25ºC.

PROCEDURE:-

The conductivity of the water sample was directly measured by using metallic electrodes of the P 138 Water Quality Analyser.

Take the sample in the beaker place the conductivity cell in it and measure the conductance, The conductivity cell is standardized by measuring the KCl solution.

CALCULATIONS:-

Cell Constant =

Conductivity =Observed conductance x Cell Constant

RESULT:- The conductivity of the given sample was found to be

ESTIMATION OF CHLORIDES

AIM: Estimate the Chloride content in the given water sample.

APPARATUS: Burette, pipette, conical flask, volumetric flask, etc.

CHEMICALS: Potassium Chromate, Silver Nitrate 0.02N

PRINCIPLE: Silver Nitrate reacts with chloride to form a very slightly soluble white precipitate of AgCl. At the endpoint when all the chloride gets precipitated, free silver ions react with chromate to form silver chromate of reddish-brown color.

PROCEDURE:

1) Take 25ml of the given water sample.
2) Add 2 ml potassium chromate.
3) Fill the burette with 0.02N $AgNO_3$
4) Titrate the given sample against $AgNO_3$ till we get a red precipitate of silver chromate and note down the endpoint.

FORMULA:

Chloride (mg/L)= $\frac{(A \text{ ml of } AgNO_3 \text{ x N of } AgNO_3)X\ 1000\ X\ 35.5}{\text{Volume of sample}}$

Where,A= ml of $AgNO_3$ required

N= Normality of $AgNO_3$

Volume of sample=25

Well Water Sample	Volume of water sample	Volume of AgNo3(ml)	Mean
1			
2			

CALCULATIONS:

Chloride(mg\L)=$\frac{(A \text{ ml of } AgNo_3 \text{ x N of } AgNo_3)x\ 1000\ x35.45}{\text{Volume of sample}}$

= [(x0.01)x35.45x1000]/50

= mg/L

Result:- Chloride content in the given sample is found to be mg/L

INTERPRETATION:

The observation value of chloride was found to be less than that of standard value, hence the given water sample can't be used for drinking and agriculture purposes.

ESTIMATION OF ALKALINITY

Introduction : Alkalinity is the measure of the buffering capacity of water for the capacity of bases to neutralize acids. Measuring alkalinity is important determining a streams ability to neutralize the acid pollution from rainfall or waste water and alkalinity does not refer to pH but instead refer to the ability of water to resists change in pH . The presence of buffering material helps in neutralizing acid as they are primarily the bases that is carbonate and bicarbonates.Alkalinity not only helps to regulate the PH of water body. But also the metal content. Bicarbonates and carbonates ion in water can remove toxic metal by precipitating metal out of solution.Water quality standards and other criteria regarding alkalinity, Because alkalinity varies greatly due to differences in geology, there are no general standards for alkalinity. Levels of 20-200mg/L are typical of freshwater. A total alkalinity level of 100-200mg/L will stabilize the pH level in stream. Level below 10mg/L indicates the system is poorly buffered and is susceptible to changes in pH from natural and human caused sources.

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Total Alkalinity, Carbonate and Bicarbonate can be estimated by titrating the sample with strong acid (HCL, Sulphuric acid), first to pH 8.3 using phenolphthalein as an indicator and then further to pH between 4.2 -5.4 with methyl orange or mixed indicator. In first case, the value is called as phenolphthalein Alkalinity (PA) and in second case, it is total Alkalinity (TA). Values of Carbonates and Bicarbonates and hydroxyl ion can be computed from these two types.

REAGENTS:

A. Sodium Hydroxide, 0.05N

B. Methyl Orange Indicator

C. Phenolphthalein indicator

PROCEDURE :

1) Take 25ml of colorless sample in a conical flask and add 2-3 drops of Methyl Orange.

2) If the solution turns yellow, the Methyl Orange acidity is absent. In case the content turns pink, titrate with 0.5N NaOH. At the end point, the color changes from pink to yellow.

3) Now add a few drops of phenolphthalein indicator to the same and titrate.

FORMULA :

Alkalinity (PA) as CaCO3mg/L=A×Normality of HCL×1000×50/ Volume of sample

Alkalinity (TA) as CaCO3mg/L= B×Normality of HCL×1000×50/ Volume of sample

Where A= volume of HCL used with only PA

B = Volume of HCl required with PA and M.O.

PA = Phenolphthalein alkalinity.

TA = Total alkalinity.

OBSERVATION:

Sr. no.	Volume of sample taken	Volume of H_2SO_4 Required	Constant reading
1.			
2.			
3.			

Calculation:

Phenolphthalein alkalinity (PA)=(A×N)×1000×50/ml of sample

= ---- x0.17x1000x50/25

= mg/L

Total Alkalinity (TA)=(B×N)×1000×50 /Vol of sample

= --- X0.17X1000X50/50

= mg/L

RESULT:

1. Phenolphthalein Alkalinity of the given sample was found to be mg/L

2. Total Alkalinity of the given sample was found to be mg/l

Rashtrasant Tukadoji Maharaj Nagpur University Nagpur

(Established by Government of Central Provinces Education Department by Notification No. 513 dated the 1st of August, 1923 & presently a State University governed by Maharashtra Public Universities Act, 2016 (Mah. Act No. VI of 2017).)

University Skill Development Centre
(under Board of Lifelong Learning and Extension)

CERTIFICATE

No. JSA/**EWM/28**

Shri/Smt./Ku **Utkarsha V. Kothe** is awarded with Certificate on successful completion of the course titled Certificate Course in **Skill-Based Course Environment and Water Management** under **Jeevan Shikshan Abhiyan** conducted for **45 hours** from **20/03/2024 to 12/07/2024** by the **Board of Lifelong Learning & Extension** in collaboration with **Shri Shivaji Education Society Amravati's Science College, Nagpur.**

He/She has passed the Examination with **B +** Grade.

Total Credits Earned:**1 (One)**

Prof. M. P. Dhore	**Dr. P. N. Deshmukh**	**Dr. Nishikant Raut**
Principal	Course Co-ordinator	Director
SSESA's Science College, Nagpur	SSESA's Science College, Nagpur	Board of Lifelong Learning & Extension