

Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar

Department of Chemistry

Date: 12/02/2021

Short Term Course: "Instrumental Methods in Chemical Analysis"
Board of Studies – 2020-2021

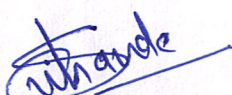
Sr.No.	Designation	Name of Person
1	Chairman	• Dr J. G. Jadhav (Principal)
2	Member	• Dr D.R. Nagargoje (HOD Chemistry)
3	Member	• Dr V.B. Gade (Expert)
4	Member	• Prof. D.H. Arekar (Chairman Short Term Course Committee)
5	Member	• Prof. S.R. Vhande (Co-ordinator, "Instrumental Methods in Chemical Analysis" short term course)


Minutes of Meeting

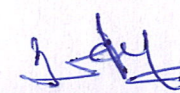
Board of studies meeting of the short term Course of Certificate Course in "Instrumental Methods in Chemical Analysis" was conducted on 12/02/2021 at 12.30 pm in the department of Chemistry.

The following points are discussed in the meeting.

- Syllabus formation of instrumental method in chemical analysis short term course
- Distribution of work
- Fee structure
- Encouragement of students


Course Coordinator


Head / विभागप्रमुख
Head Dept. of Chemistry विभाग
Department of Chemistry


PRINCIPAL
Arts, Science & Com. College
Mokhada, Dist. Palghar





Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada,
Dist. Palghar



Department of Chemistry

Date: 12/02/2021

Notice

All students of chemistry short-term course are hereby informed that, the department of chemistry short term course "**Instrumental Methods in Chemical Analysis**" will be conducted on **15/02/2021** at **10.00 - 11.00 am**. Absent students will not be entertained. All students should remain present.

Course Coordinator

Head,

Department of Chemistry



Principal

**Arts, Science & Commerce, College
Mokhada, Dist. Palghar**

Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar

Department of Chemistry
Short Term Course: "Instrumental Methods in Chemical Analysis"

Time Table

2020-21

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10.00 am to 11.00 am	DRN	SRV	VBG	RKK	RAK	--
2.00 pm to 4.00 pm	--	--	--	Practical	Practical	--



hee
Head
Department of Chemistry

S. R. Vhande
Course Coordinator
(Prof. S. R. Vhande)

Y. S.
Principal
Arts, Science & Commerce, College
Mokhada, Dist. Palghar



Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar

Phone-02529-256628/256706

Email-asccmokhada@gmail.com

Website: www.asccmokhada.co.in

Department of Chemistry

Carrier Oriented Short Term / Certificate Course

Course code & Name: USCS01 "Instrumental Methods in Chemical Analysis"

Duration of Course: 03 Months

Aims and Objectives:

1. To make students understand potentiometry, its types and applications.
2. To make students understand the working principle of colorimetry, pH metry and their applications.
3. To make students understand UV-Visible spectroscopy, Beer-Lamberts law, working and applications.
4. To make students understand conductivity cell, Ostwald's dilution law and applications in neutralization reactions.

Course Syllabus 2020-21

1. Potentiometry

Principle, instrumentation, Types of electrodes-reference and indicator electrode, role of reference and indicator electrode and its working, Application in neutralization reactions with strong acid against strong base and strong acid against weak base. (8 L)

2. Colorimetry

Principle, construction and working, applications of colorimetry, advantages and limitations. (8 L)

3. pH metry



Course Outcomes:

1. Student should learn potentiometry, role of reference and indicator electrode in potentiometric titrations.
2. Student should learn colorimetry and applications of colorimetry.
3. Student should learn pH metry, types, analysis and its applications.
4. Student should learn how to apply Beer-Lamberts law, its equation and working of UV-Visible spectroscopy and its applications.
5. Student should learn about conductivity cell, Ostwald's dilution law and application in neutralization titrations.

References:

1. Practical physical chemistry 3rd edition- A. M. James and F.E. Prichard, Longman Publication.
2. Experiments in physical chemistry- R. C. Das and B. Behra, Tata McGraw Hill.
3. Advanced practical physical chemistry- J. B. Yadav, Goel Publishing House.
4. Advanced Experimental Chemistry, Vol-I,- J. N. Gurtu and R. Kapoor, S. Chand and Co.
5. Experimental Physical Chemistry – V. D. Athawale

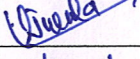
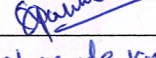


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Department of Chemistry

Short Term Course: "Instrumental Methods in Chemical Analysis"

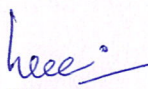
Admitted Student List-2020-21

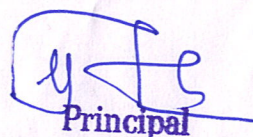
S.N.	Name of the Student	Mobile Number	E-mail	Sign
1.	Fupane Vijay Santosh	7385566276	vijayfupane123@gmail.com	
2.	Dive Gauri Harichandra	9112423526	gauridive1309@gmail.com	
3.	Bhoye Pooja Bhaskar	7798246601	poojabhoye545@gmail.com	
4.	Nande Ujwala Bhagwan	9503935162	ujwalanande2020@gmail.com	
5.	Jadhav Purva Anil	7798623600	purvajadhav16@gmail.com	
6.	Madake Manali Motiram	7798818390	manalimadake3899@gmail.com	
7.	Bhogade Vasudev Dhavalu	9370218916	vasudevbhogade121@gmail.com	
8.	Thakare Vilas Balu	7021752011	vilasthakare939@gmail.com	
9.	Gavandha Rushikesh Shankar	8381054849	bsc42@gmail.com rushigavandha59048@gmail.com	
10.	Labad Premnath Madhu	9307924678	premnathrabade648@gmail.com	
11.	Nadage Sonali Ramchandra	9923593681	Sonalinadage111@gmail.com	



Course Coordinator
(Prof. S. R. Vhande)




Head
Department of Chemistry


Principal
Arts, Science & Commerce, College
Mokhada, Dist. Palghar

Sr. No.	Name of the Student	15-02-2021	16-02-2021	17-02-2021	18-02-2021	22-02-2021	23-02-2021	24-02-2021
		DRN	SRV	VBG	RKK	DRN	SRV	VBG
1.	Fupane Vijay Santosh	Ab	Ab	Ab	Ab	Ab	Ab	Ab
2.	Dive Gauri Harichandra	Gande	Gande	Gande	Gande	Gande	Gande	Gande
3.	Bhoye Pooja Bhaskar	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye
4.	Nande Ujwala Bhagwan	Gande	Gande	Ab	Ab	Ab	Ab	Ab
5.	Jadhav Purva Anil	Asadkhani	Asadkhani	Asadkhani	Asadkhani	Asadkhani	Asadkhani	Asadkhani
6.	Madake Manali Motiram	Manalimadake	Manalimadake	Manalimadake	Manalimadake	Manalimadake	Manalimadake	Manalimadake
7.	Bhogade Vasudev Dhavalu	Bhogade v.d.	Bhogade v.d.	Bhogade v.g.	Bhogade v.g.	Bhogade v.g.	Bhogade v.g.	Bhogade v.g.
8.	Thakare Vilas Balu	Thakare v.s.	Thakare v.s.	Thakare v.s.	Thakare v.s.	Thakare v.s.	Thakare v.s.	Ab
9.	Gavandha Rushikesh Shankar	Bhude	Bhude	Bhude	Bhude	Bhude	Bhude	Bhude
10.	Labad Premnath Madhu	Premnath	Premnath	Premnath	Premnath	Premnath	Premnath	Premnath


Course Coordinator




Head,
Dept. of Chemistry

Dept. of Chemistry


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Arts, Science & Commerce, Coll.
Mokhada, Dist. Palghar

Short Term Course: "Instrumental Methods in Chemical Analysis"

Theory Attendance Report 2020-21

Sr. No.	Name of the Student	25-02-2021	26-02-2021	1-03-2021	02-03-2021	03-03-2021	04-03-2021	05-03-2021
		RKK	RAK	DRN	SRV	VBG	RKK	RAK
1.	Fupane Vijay Santosh	Ab	Ab	Ab	Ab	Ab	Ab	Ab
2.	Dive Gauri Harichandra	Gm	Gm	Gm	Gm	Gm	Gm	Gm
3.	Bhoye Pooja Bhaskar	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye
4.	Nande Ujwala Bhagwan	Nande	Nande	Nande	Nande	Nande	Nande	Nande
5.	Jadhav Purva Anil	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav
6.	Madake Manali Motiram	Madake	Madake	Madake	Madake	Madake	Madake	Madake
7.	Bhogade Vasudev Dhavalu	Bhogade v.p.	Bhogade v.p.	Bhogade v.p.	Bhogade v.p.	Bhogade v.p.	Bhogade v.p.	Bhogade v.p.
8.	Thakare Vilas Balu	Thakare v.b.	Thakare v.b.	Thakare v.b.	Thakare v.b.	Thakare v.b.	Thakare v.b.	Thakare v.b.
9.	Gavandha Rushikesh Shankar	Gavandha	Gavandha	Gavandha	Gavandha	Gavandha	Gavandha	Gavandha
10.	Labad Premnath Madhu	Labad	Labad	Labad	Labad	Labad	Labad	Labad

Labad
Course Coordinator



Labad
Head,

Dept. of Chemistry

Labad
Principal

Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar
Department of Chemistry

Short Term Course: "Instrumental Methods in Chemical Analysis"
Theory Attendance Report 2020-21

Sr. No.	Name of the Student	08-03-2021	09-03-2021	10-03-2021	12-03-2021	15-03-2021	16-03-2021	17-03-2021
		DRN	SRV	VBG	RAK	DRN	SRV	VBG
1.	Fupane Vijay Santosh	Ab	Ab	Ab	Ab	Ab	Ab	Ab
2.	Dive Gauri Harichandra	Guz	Guz	Guz	Guz	Guz	Guz	Guz
3.	Bhoye Pooja Bhaskar	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye
4.	Nande Ujwala Bhagwan	Nande	Nande	Nande	Nande	Nande	Nande	Nande
5.	Jadhav Purva Anil	Asadhav	Asadhav	Asadhav	Asadhav	Asadhav	Asadhav	Asadhav
6.	Madake Manali Motiram	Madake	Madake	Madake	Madake	Madake	Madake	Madake
7.	Bhogade Vasudev Dhavalu	Bhogade v.s.	Bhogade v.s.	Bhogade v.s.	Bhogade v.s.	Bhogade v.s.	Bhogade v.s.	Bhogade v.s.
8.	Thakare Vilas Balu	Thakare	Ab	Thakare	Thakare	Thakare	Thakare	Ab
9.	Gavandha Rushikesh Shankar	Rushik	Rushik	Ab	Ab	Ab	Ab	Ab
10.	Labad Premnath Madhu	Premnath	Premnath	Premnath	Premnath	Premnath	Premnath	Premnath

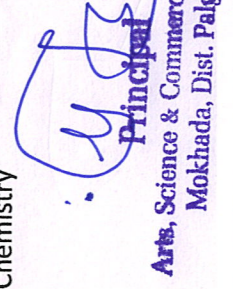

Course Coordinator




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Department of Chemistry

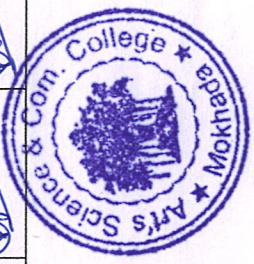
Short Term Course: "Instrumental Methods in Chemical Analysis"

Theory Attendance Report 2020-21

Sr. No.	Name of the Student	18-03-2021	19-03-2021	22-03-2021	23-03-2021	24-03-2021	25-03-2021	26-03-2021
		RKK	RAK	DRN	SRV	VBG	RKK	RAK
1.	Fupane Vijay Santosh	Ab	Ab	Ab	Ab	Ab	Ab	Ab
2.	Dive Gauri Harichandra	Gmz	Gmz	Gmz	Gmz	Gmz	Gmz	Gmz
3.	Bhoye Pooja Bhaskar	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye	Bhoye
4.	Nande Ujwala Bhagwan	Nande	Nande	Nande	Nande	Nande	Nande	Nande
5.	Jadhav Purva Anil	Asadhav	Asadhav	Asadhav	Asadhav	Asadhav	Asadhav	Asadhav
6.	Madake Manali Motiram	Madake	Madake	Madake	Madake	Madake	Madake	Madake
7.	Bhogade Vasudev Dhavalu	Bhogade	Bhogade	Bhogade	Bhogade	Bhogade	Bhogade	Bhogade
8.	Thakare Vilas Balu	Ab	Thakare	Thakare	Thakare	Thakare	Ab	Thakare
9.	Gavandha Rushikesh Shankar	Kushni	Kushni	Kushni	Ab	Kushni	Kushni	Kushni
10.	Labad Premnath Madhu	Premnath	Premnath	Premnath	Premnath	Premnath	Premnath	Ab

Atmank
Course Co-ordinator

Heeri
Head
Department of Chemistry



UJS
Principal
Arts, Science & Commerce, College
Mokhada, Dist. Palghar

Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar
Department of Chemistry

Short Term Course: "Instrumental Methods in Chemical Analysis"
Theory Attendance Report 2020-21

Sr. No.	Name of the Student	30-03-2021	31-03-2021				
		SRV	VBG				
1.	Fupane Vijay Santosh	Ab	Ab				
2.	Dive Gauri Harichandra						
3.	Bhoye Pooja Bhaskar						
4.	Nande Ujwala Bhagwan						
5.	Jadhav Purva Anil						
6.	Madake Manali Motiram						
7.	Bhogade Vasudev Dhavalu	Ab					
8.	Thakare Vilas Balu						
9.	Gavandha Rushikesh Shankar	Ab	Ab				
10.	Labad Premnath Madhu						

Course Coordinator



Head,
Dept. of Chemistry

Dept. of Chemistry

Principal
Arts, Science & Commerce, Coll.
Mokhada, Dist. Palghar

Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar
Department of Chemistry

Short Term Course: "Instrumental Methods in Chemical Analysis"
Practical's Attendance Report 2020-21

Sr. No.	Name of the Student	18-02-2021	25-02-2021	26-02-2021	04-03-2021	05-03-2021
		DRN	SRV	VBG	RKK	RAK
1.	Fupane Vijay Santosh	Ab	Ab	Ab	Ab	Ab
2.	Dive Gauri Harichandra					
3.	Bhoye Pooja Bhaskar					
4.	Nande Ujwala Bhagwan					
5.	Jadhav Purva Anil					
6.	Madake Manali Motiram					
7.	Bhogade Vasudev Dhavalu					
8.	Thakare Vilas Balu					
9.	Gavandha Rushikesh Shankar					
10.	Labad Premnath Madhu					

Course Coordinator



Head,
Dept. of Chemistry

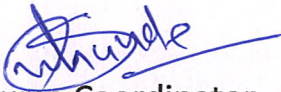
Principal
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Mokhada, Dist. Palghar

Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar
Department of Chemistry

Date: 25/03/2021

Notice

All students of T.Y.B.Sc. Chemistry are hereby informed that, theory examination for the short term course "**Instrumental Methods in Chemical Analysis**" will be conducted on **1/04/2021** at **11.00 am**. The test will be of 50 marks objective type. Absent students will not be entertained. All students should remain present.



Course Coordinator



Head,

Dept. of Chemistry,
ASC College, Mokhada.



Principal

Arts, Science & Commerce, College
Mokhada, Dist. Palghar

Rayat Shikshan Sanstha's,
Arts, Science and Commerce College, Mokhada, Dist. Palghar
Department of Chemistry
Short term Course Examination 2020-21
Instrumental Methods in Chemical Analysis

Class: TYBSc Chemistry

Marks: 50

Time: 11 am-12 pm

Date: 01/04/2021

- Instructions:
1. All questions are compulsory
 2. All questions carry equal marks
 3. Choose the correct alternative

1. The electrode potentials are calculated by.....
 - a. Ilkovic Equation
 - b. Nernst equation**
 - c. Stokes Equation
 - d. Ohm's Law
2. The electrochemical analysis, in which the current is measured by keeping potential constant is....
 - a. Potentiometric Titrations
 - b. Conductometric Titrations
 - c. Amperometric Titrations**
 - d. Voltametry
3. All of the following statements are correct regarding potentiometric titrations, except....
 - a. They are suitable for colored or turbid reactions
 - b. The emf of the cell is zero at the equivalence point**
 - c. These are not suitable for analysis of dilute solution less than 0.001 M
 - d. Liquid junction potentials will not influence the study
4. In an electrolytic cell, metal passes in to ions at...
 - a. Cathode**
 - b. Anode
 - c. Salt bridge
 - d. No oxidation or reduction
5. The expressions valid in potentiometry are....
 - a. $E_{\text{Cell}} = E_{\text{ERE}} - E_{\text{ISE}}$
 - b. $E_{\text{Cell}} = E_{\text{ISE}} - E_{\text{ERE}} + E_{\text{J}}$**
 - c. $E_{\text{ISE}} = E_{\text{IRE}} - E_{\text{membrane}}$
 - d. $E_{\text{ISE}} = E_{\text{IRE}} - E_{\text{J}}$
6. An electrode has the standard electrode potential as +2.50V. The electrode will be...
 - a. Higher the oxidizing capacity**
 - b. Higher the reducing capacity
 - c. Anode
 - d. All of the above
7. Standard hydrogen electrode...



- c. Composition
d. Volume
16. The representation of Beer Lambert's law is given as $A = abc$. If 'b' represents distance, 'c' represents concentration and 'A' represents absorption, what does 'a' represent?
- a. Intensity
b. Transmittance
c. **Absorptivity**
d. Admittance
17. Which of the following is not true about Absorption spectroscopy?
- a. It involves transmission
b. Scattering is kept minimum
c. **Reflection is kept maximum**
d. Intensity of radiation leaving the substance is an indication of concentration
18. Transmittance is given as $T = P/P_0$. If P_0 is the power incident on the sample, what does P represent?
- a. **Radiant power transmitted by the sample**
b. Radiant power absorbed by the sample
c. Sum of powers absorbed and scattered
d. Sum of powers transmitted and reflected
19. What is the unit of absorbance which can be derived from Beer Lambert's law?
- a. $L \text{ mol}^{-1} \text{ cm}^{-1}$
b. $L \text{ gm}^{-1} \text{ cm}^{-1}$
c. Cm
d. **No unit**
20. What is the unit of molar absorptivity or absorptivity which is used to determine absorbance A in Beer Lambert's formula?
- a. **$L \text{ mol}^{-1} \text{ cm}^{-1}$**
b. $L \text{ gm}^{-1} \text{ cm}^{-1}$
c. Cm
d. No unit
21. Range of pH scale is...
- a. 7 to 10
b. 0 to 10
c. **0 to 14**
d. 7 to 14
22. Which of the following is the formula for pH calculation?
- a. $\log_{10}[\text{H}^+]$
b. **$-\log_{10}[\text{H}^+]$**
c. $\log_2[\text{H}^+]$
d. $-\log_2[\text{H}^+]$
23. Pure water is known to be which of the following?
- a. **Weak electrolyte**
b. Strong electrolyte



42. Which equation is explained Ohm's law?
- $K = G L/A$
 - $I = E/R$
 - $\lambda_{eq} = 1000k/c_{eq}$
 - $\lambda = 1000k/c$
43. The specific conductance (k) of a solution containing 1 gm equivalent of solute in 1000 cm³ of solution." this sentence shows which term definition?
- Ohm's Law
 - SPECIFIC CONDUCTANCE**
 - Molar conductance
 - Equivalent conductance (λ_{eq})**
44. Which is not application of conductometry?
- determine of moisture and water contain**
 - Purity of water
 - Ionic product of water.
 - Conductometric titration & precipitation titration
45. In conductometry solution if temp. is increase by 1°C
- 1% rise in mobility of ions.
 - 2% rise in mobility of ions.**
 - 3% rise in mobility of ions.
 - 4% rise in mobility of ions.
46. If the ion size is decrease in solutions...
- Conductance decrease
 - Conductance increase**
 - a and b
 - None of the above
47. Conductivity cells are made up of...
- Two silver rods
 - Two parallel sheets of platinum**
 - Glass membrane of Ag/AgCl
 - Sb-Sb₂O₃
48. The units for specific conductance is....
- Ohms
 - Ohms cm**
 - Mhos
 - Mhos cm
49. Which is not type of conductivity cells?
- TYPE-A
 - TYPE-B
 - TYPE-C
 - TYPE-D**
50. Which material are used for coating a conductivity cell?
- Platinum black**
 - Platinum
 - Copper
 - Iron





Rayat Shikshan Sanstha's,
Arts, Science & Commerce College, Mokhada
Dist. Palghar 401604



Department of Chemistry
Short Term Course: 2020-2021

"Instrumental Methods in Chemical Analysis"

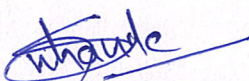
Date: 06/04/2021

Report


In the academic year 2020-2021, a short-term course entitled "**Instrumental Methods in Chemical Analysis**" was carried out by department of chemistry. Total **(11)** students were participated in this course. The Duration of course was three months. The course contained curriculum to develop skills of operating instruments and using various methods in analysis of chemical compounds. The level of knowledge and skills they obtained was assessed through the exam conducted during this course. The knowledge will be useful to the students for self-employment and entrepreneurship in future. All the participated students have completed this course successfully.


Outcomes:

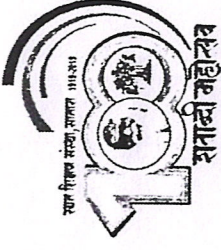
1. Students learns the operating instruments and analysis of chemical compounds.
2. Students learn about conductometric titration of weak acids weak bases and mixture of weak acid and weak base.
3. Students learn about pH metry its working and applications.
4. Student learn the quantitative determination of analytes, such as transition metal ions.
5. Student learn about conductivity cell, Ostwald's dilution law and application in neutralization titrations.
6. Students promotes self- employment and entrepreneurship in future.


Course Coordinator




Head,
Department of Chemistry


Principal
Arts, Science & Commerce, College
Mokhada, Dist. Palghar



Rayat Shikshan Sanstha's

Arts, Science and Commerce College, Mokhada,

Tal: Mokhada, Dist: Palghar-401604

Short Term Course on

"INSTRUMENTAL METHODS IN CHEMICAL ANALYSIS"

Certificate

This is to certify that Mr./ Mrs./ Miss. _____

of T. Y. B.Sc.

Chemistry has successfully completed short term course entitled *Instrumental Methods in Chemical Analysis* conducted by Department of Chemistry, ASC College, Mokhada.

Prof. S. R. Vhande
Coordinator

Dr. D. R. Nagargoje
Head, Dept. of Chemistry

Dr. J. G. Jadhav
Principal