

Rayat Shikshan Sanstha's
S.S.G.M. College, Kopargaon
Short Term Course

INSTRUMENTAL METHODS IN CHEMICAL ANALYSIS

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Rayat Shikshan Sanstha's
Shri Sadguru Gangageer Maharaj Science, Gautam Arts & Sanjivani Commerce
College Kopargaon-423601
Dist-Ahmednagar, State: Maharashtra (India)
Internal Quality Assurance Cell (IQAC)

Syllabus Approval Letter

2019-2020

The IQAC committee has approved the submitted syllabus of short term /Certificate course planned to be conducted by the Department of Chemistry .

Sr.NO	Name of Course	Type of Course
01	Instrumental Methods in Chemical Analysis	Short term course

HOD OF Chemistry Department may Proceed accordingly .

Date :- 04/09/2019

Place :- Kopargaon


IQAC Coordinator
IQAC-Coordinator
S.S.G.M.College,Kopargaon




Head

Department of Chemistry

Instrumental Methods of Chemical Analysis

(2019-2020)

Co-ordinate by : Department of Chemistry
Class: T. Y. B. Sc.
Batch Capacity:
No. of students Admitted: 3 Months
Duration of the course: 3 Months
Fee of Course: 200/-
Lecture and Practical started: December, January, February and
March
Tentative date of Examination: 1st week of March
Tentative date of examination: 2nd week of March
Syllabus: 4 credits (Theory+Practicals).


Co-ordinator:


Head



Department of Chemistry
SSGM College Kopargaon
Dist: Ahmednagar

Rayat Shikshan Sanstha's

S.S.G.M. College, Kopargaon, Dist- Ahmednagar

Department of Chemistry

2019-20

**CERTIFICATE COURSE IN INSTRUMENTAL METHODS IN
CHEMICAL ANALYSIS**

Board of Studies (BOS)

Department of Chemistry have decided to start Certificate Course in Instrumental Methods in Chemical Analysis. For framing the Syllabus of said course, committee was constituted as follow.

Board of Studies Member (BOS)

- | | |
|--------------------------|---|
| 1. Prin. Dr. Thopte S.S. | : Chairman |
| 2. Mr. Deshmukh A.K. | : HOD of Chemistry |
| 3. Prof. Jadhav Ajit | : Placement Officer |
| 4. Dr. Malpure N. V. | : IQAC- Coordinator |
| 5. Dr. Konda Rakesh | : Professional Expert |
| 6. Mr. MAITRIYA A D. | : Director of Shodh Advantech, Aurangabad |

Aims and Objectives of the course:

- 1) To provide an adequate knowledge of the principles
- 2) instrumentation and applications of common analytical techniques
- 3) including atomic and molecular absorption spectroscopy
- 4) electrochemical and separation methods
- 5) Understand the operational framework for best practices in Company .



S.S.G.M. College, Kopargaon

Department Of Chemistry,

Class –T.Y.B.Sc.

**Short Term Course- A Certificate Course in Instrumental Method of
Chemical Analysis**

Credit:-4

Co-ordinator- Prof. Jawale S.C.

Aim of Course:-

The students will acquire excellent knowledge of analytical chemistry and sound analytical skill which help them for their bright prospects for research, Self Employment and Excellent opportunities for job.

Skills and opportunities:-

Instrumental methods of chemical analysis technique is concerned primarily with quantitative analysis technique and includes discussion of how to design an analytical method which depends on what information is needed in the first year course of "Certificate course in Instrumental methods of Chemical Analysis"

The student will get the basic knowledge of analytical chemistry and different analytical techniques. The students will get familiar with basic principles of colorimeter, conductivity meter, potentiometer, pH meter, from this course students will become more eligible to work in all type of research and industrial Laboratories in the future it will also help them for getting employment.



- i) Schematic diagram of colorimeter and Instrumentation
- j) Beer's law
- k) Numerical problems

4. Potentiometer

- a) Electrolytes and non-electrolytes
- b) Arrhenius theory
- c) Electromotive force
- d) Electrochemical cells
- e) Voltaic cells
- f) Galvanic cell
- g) Poggendorffs compensation principle
- h) Standardization of potentiometer
- i) Western standard cells
- j) Nernst equation
- k) Numerical problems

5. pH Meter

- a) Definition of pH and pOH
- b) Operational definition of pH
- c) Electrodes – glass electrode, calomel electrode
- d) pH meters: Potentiometric pH meter
- e) Buffer and buffer action
- f) Numerical problems

6. Chromatography

- a) Introduction to chromatography
- b) Classification of chromatography
- c) Paper chromatography
- d) Types of paper chromatography
- e) Experimental details for qualitative analysis-Choice of proper

Theory Topics (2 Credit)- Duration – 3 months**Instrumental methods of chemical analysis****a) General introduction**

b) Analysis – What is mean by analysis?

Types of analysis : qualitative and quantitative analysis Quantitative – volumetric/ gravimetric analysis

c) What is analytical chemistry?

d) Sampling

e) Classification if instrumental methods

f) Electromagnetic radiation and properties

g) Numerical problems

2 Conductivity

a) Ohm's law

b) Resistance

c) Specific resistance

d) Conductance

e) Specific conductance

f) Equivalent conductance

g) Wheatstone bridge

h) Conductivity cells

i) Cell constant

j) Numerical problems

3. Colorimeter

a) Colors

b) Color comparators

c) Visual comparators

d) Fundamental laws of colorimeter

e) Lambert's law

f) Beers law

g) Lambert's – Beer's law

h) Terminology



chromatographic technique, Choice of filter, paper, Proper developing solvent, Preparation of samples, Spotting, Physical methods, Calculation of R_F values, Experimental details of quantitative analysis

7. Thermal methods

- a) Introduction to thermal methods of analysis
- b) Thermal analysis techniques
- c) Thermogravimetry – introduction
- d) Results, information from TG curve
- e) Factors affecting thermogravimetric curve
- f) Instrumentation for thermogravimetry
- g) Applications of thermogravimetry.

8. Solvent Extraction

- a) Introduction
- b) Principles of solvent extraction
- c) Distribution law, efficiency of extraction
- d) Sequence of the extraction process
- e) Extraction techniques
- f) Numerical problems

Practicals-A)

- I) Use of electronic balance.
- II) Measurement of conductance of electrolytes.
- III) Determination of cell constant.
- IV) Determination of pH of given solution by pH meter.

B)

- I) Introduction and understanding of working of Conductivity meter, Colorimeter.

C)

- I) Determination of λ_{max} of potassium permanganate.
- II) Variation of absorbance with concentration of potassium dichromate.

D)

- I) Determination of e.m.f of calomel electrode.
- II) Determination of pH of given solution by potentiometer.

- III) Determination of λ_{\max} of CuSO_4 .
IV) Determination of λ_{\max} of $\text{K}_2\text{Cr}_2\text{O}_7$.

E)

- I) Determine Partition Coefficient of 12 in CCl_4 & H_2O .
II) Identify radicals from given mixture.
III) Identify radicals by using paper Chromatography.
IV) Determine the RF values of given organic compounds.

F)

- i) Introduction and understanding of working of Potentiometer, pH meter.
a) Use of electronic balance.
b) Measurement of conductance of electrolytes.
c) Determination of cell constant.
d) Determination of pH of given solution by pH meter.
e) Variation of absorbance with concentration of Potassium dichromate.

REFERENCES :

1. Instrumental Methods of Chemical Analysis- Gurudip Chatwal, Sham Anand.
2. Introduction to Instrumental Analysis –Robert Braun.
3. Fundamentals of Analytical Chemistry- D.A.Skoog, D.M.West, F.J.James Holler, S.R.Crouch, Thomson's Books, Cole Publisher –Devil Hris, 2nd Reprint- 2004.
4. Principles of Physical Chemistry-4th Edition Prutton and Marron
5. Analytical Chemistry –Narkhede.
6. Basic Concepts of Analytical Chemistry-2nd Edition, S.M.Khopkar.
7. Instrumental Methods of Chemical Analysis, 6th Edition, Willard, Merritt, Dean.
8. Vogel's Textbook of Quantitative Analysis.-4th Edition –S.M.Khopkar.

Rayat Shikshan Sanstha's
SSGM College, Kopargaon

Short term Course – Instrumental Methods of Chemical Analysis

Class: T.Y.B.Sc.

List of Enrolled Students

Fees: 200 Rs

Sr. No	Name of Students	Amount	Sign
1	Dodiyal Simranjeet	200/-	
2	Ghumare Nisha	200/-	
3	Ghumare Nikita	200/-	
4	Nitin More	200/-	
5	Jejurkar Rushikesh	200/-	
6	Nagare Akshay	200/-	
7	Rahane Shital	200/-	
8	Pachore Priyanka	200/-	
9	Bolij Shraddha	200/-	
10	Mahale Vaishnavi	200/-	
11	Madhavai Artee Dattatray	200/-	
12	Jamdar Arti Macchindra	200/-	
13	Jorvekar Pratiksha Santosh	200/-	
14	Deokar Shubhangi Rajendra	200/-	
15	Deokar Priyanka Dinkar	200/-	
16	Gawali Harshad Vilas	200/-	
17	Jore Sagar Balasaheb	200/-	
18	Dighe Shubhangi Arjun	200/-	
19	Adhav Purvija Satish	200/-	
20	Teke Kaveri Sahebrao	200/-	
21	Pawar Prajakta Ajaikumar	200/-	
22	More Priyanka Raghunath	200/-	
23	Shelke Pooja Nitin	200/-	



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Rayat Shikshan Sanstha's
SSGM College, Kopargaon

Class: T.Y.B.Sc.

Date: 04/09/2019

Academic Year: 2019-2020

**Short Term Course- A Certificate Course in instrumental
Method of Chemical Analysis**


Notice

All students of T.Y.B.Sc. Class informed that Department of Chemistry will be conducting the Short Term Course entitled "Instrumental Method of Chemical Analysis". All the Students should submit their names to Asst. Prof. R. M. Dawange.

Up to the Date of -0 8/09/2019.

Course Fees: 200/-


Co-ordinator,


Head,

Department of Chemistry
Deptt. Of Chemistry
S. S. G. M. College, Kopargaon





Rayat Shikshan Sanstha's
S.S.G.M. College, Kopargaon
Dist: Ahmednagar.



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Short term Course- Admission form

Name	Adhav purvija satish
Class	T.Y. B.Sc
Address	Balaji Angan, Vivekamand Nagar, kop.
Mobile No	8530637279

To,

The Principal

SSGM College, Kopargaon, Dist: Ahemednagar.

Sub: Request to an admission in the following short term course

"...Instrumental Methods of chemical Analysis"

Respected sir,

I, the undersigned have been admitted in T.Y.B.Sc./M.Sc-II (Analytical) Chemistry class in our college, I wish to complete above short term course run by our college. Kindly do me a favour by granting admission

Yours Faithfully

Sign: *Purvija*

Name: Adhav purvija satish


Recommended for an admission in the short term course.


Chairman

Short term course


Course Co-ordinator




Head of department

HEAD

Deptt. Of Chemistry
S. G. M. Col.



Rayat Shikshan Sanstha's
S.S.G.M. College, Kopargaon
Dist: Ahmednagar.



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Short term Course- Admission form

Name	Madhavai Artee Dattatray
Class	T.Y.B.Sc. (Chemistry)
Address	At. Post. Kanhegaon tal. Kopargaon
Mobile No	8625959679

To,
The Principal
SSGM College, Kopargaon, Dist: Ahmednagar.

Sub: Request to an admission in the following short term course
"Instrumental Methods of chemical Analysis."

Respected sir,

I, the undersigned have been admitted in T.Y.B.Sc./M.Sc II (Analytical) Chemistry class in our college, I wish to complete above short term course run by our college. Kindly do me a favour by granting admission

Yours Faithfully

Sign:

Name: Madhavai Artee Dattatray

Recommended for an admission in the short term course.

Chairman

Short term course



Head of department

HEAD
Dept. Of Chemistry
S. S. G. M. College



Rayat Shikshan Sanstha's
S.S.G.M. College, Kopergaon
Dist: Ahmednagar.



Short term Course- Admission form

Name	Nagare Akshay Rajesh
Class	T.Y. BSc
Address	At/Po-1-Brahmangaon, Kopergaon, A-Nagor
Mobile No	8600976811

To,

The Principal

SSGM College, Kopergaon, Dist: Ahemednagar.

Sub: Request to an admission in the following short term course

“Instrumental Methods of chemical Analysis.”

Respected sir,

I, the undersigned have been admitted in T.Y.B.Sc./M.Sc II (Analytical) Chemistry class in our college, I wish to complete above short term course run by our college. Kindly do me a favour by granting admission

Yours Faithfully

Sign:

Name:

Nagare Akshay Rajesh

Recommended for an admission in the short term course.

Chairman

Short term course

Course Co-ordinator



Head of department

HEAD
Deptt. Of Chemistry
S.S.G.M. College, Kopergaon

Rayat Shikshan Sanstha's

SSGM College, Kopargaon

Short Term Course- A Certificate Course Instrumental Methods of chemical Analysis

Class- T.Y.B.Sc.(Chemistry)

Time Table -2019-20

December 2019

Monday (theory)	Tuesday (theory)	Wednesday (theory)
02/12/19 (SCJ)	03/12/19 (SCJ)	04/12/19 (DNG)
09/12/19 (RMD)	10/12/19 (RMD)	11/12/19 (RMD)
16/12/19 (DMS)	17/12/19 (DMS)	18/12/19 (DMS)
23/12/19 (DNG)	24/12/19 (DNG)	-

January 2020

Monday (theory)	Tuesday (theory)	Wednesday (theory)
06/01/2020 (DNG)	07/1/2020 (SCJ)	08/01/2020 (SCJ)
13/01/2020 (SCJ)	14/01/2020 (DMS)	15/01/2020 (DMS)
20/01/2020 (NMC)	28/12/2020 (NMC)	29/01/2020 (NMC)

February 2020

Monday (Practical)	Tuesday (practical)	Wednesday (practical)
3/2/2020 (SCJ)	4/2/2020(SCJ)	5/2/202020 (DNG)
10/2/2020 (DMS)	11/2/2020 (NMC)	12/2/2020(NMC)
17/2/202020 (DNG)	18/2/2020 (RMD)	-



Tame Tarbale

Rayat shikshan Sanstha's
SSGM College, Kopergaon

Short term Course: Instrumental Methods of chemical Analysis (Theory)

Sr No	Name of Students	Date:				
		1	2	3	4	5
1	Dadiyal Simranjeet	<u>Simranjeet</u>	<u>Simranjeet</u>	<u>Simranjeet</u>	<u>Simranjeet</u>	<u>Simranjeet</u>
2	Ghumare Nisha	<u>Nisha</u>	<u>Nisha</u>	<u>Nisha</u>	<u>Nisha</u>	<u>Nisha</u>
3	Ghumare Nikita	<u>Nikita</u>	<u>Nikita</u>	<u>Nikita</u>	<u>Nikita</u>	<u>Nikita</u>
4	Nitin More	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>
5	Jejurkar Rushikesh	<u>Rushikesh</u>	<u>Rushikesh</u>	<u>Rushikesh</u>	<u>Rushikesh</u>	<u>Rushikesh</u>
6	Nagare Akshay	<u>Akshay</u>	<u>Akshay</u>	<u>Akshay</u>	<u>Akshay</u>	<u>Akshay</u>
7	Rahane Shital	<u>Shital</u>	<u>Shital</u>	<u>Shital</u>	<u>Shital</u>	<u>Shital</u>
8	Pachore Priyanka	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>
9	Bolij Shraddha	<u>Shraddha</u>	<u>Shraddha</u>	<u>Shraddha</u>	<u>Shraddha</u>	<u>Shraddha</u>
10	Mahale Vaishnavi	<u>Vaishnavi</u>	<u>Vaishnavi</u>	<u>Vaishnavi</u>	<u>Vaishnavi</u>	<u>Vaishnavi</u>
11	Madhavai Artee Dattatray	<u>Artee</u>	<u>Artee</u>	<u>Artee</u>	<u>Artee</u>	<u>Artee</u>
12	Jamdar Arti Macchindra	<u>Arti</u>	<u>Arti</u>	<u>Arti</u>	<u>Arti</u>	<u>Arti</u>
13	Jorvekar Pratiksha Santosh	<u>Pratiksha</u>	<u>Pratiksha</u>	<u>Pratiksha</u>	<u>Pratiksha</u>	<u>Pratiksha</u>
14	Deokar Shubhangi Rajendra	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>
15	Deokar Priyanka Dinkar	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>
16	Gawali Harshad Vilas	<u>Harshad</u>	<u>Harshad</u>	<u>Harshad</u>	<u>Harshad</u>	<u>Harshad</u>
17	Jore Sagar Balasaheb	<u>Sagar</u>	<u>Sagar</u>	<u>Sagar</u>	<u>Sagar</u>	<u>Sagar</u>
18	Dighe Shubhangi Arjun	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>
19	Adhav Purvija Satish	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>
20	Teke Kaveri Sahebrao	<u>Kaveri</u>	<u>Kaveri</u>	<u>Kaveri</u>	<u>Kaveri</u>	<u>Kaveri</u>
21	Pawar Prajakta Ajaikumar	<u>Prajakta</u>	<u>Prajakta</u>	<u>Prajakta</u>	<u>Prajakta</u>	<u>Prajakta</u>
22	More Priyanka Raghunath	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>	<u>Priyanka</u>
23	Shelke Pooja Nitin	<u>Pooja</u>	<u>Pooja</u>	<u>Pooja</u>	<u>Pooja</u>	<u>Pooja</u>

Class: T.Y.B.Sc. Attendance: 2019-2020



Rayat shikshan Sanstha's
SSGM College, Kopergaon

Short term Course: Instrumental Methods of chemical Analysis

Sr No	Name of Students	Date:				
		1	2	3	4	5
1	Dodiya Simranjeet	<u>Simranjeet</u>	<u>Simranjeet</u>	<u>Simranjeet</u>	<u>Simranjeet</u>	<u>Simranjeet</u>
2	Ghumare Nisha	<u>Nisha</u>	<u>Nisha</u>	<u>Nisha</u>	<u>Nisha</u>	<u>Nisha</u>
3	Ghumare Nikita	<u>Nikita</u>	<u>Nikita</u>	<u>Nikita</u>	<u>Nikita</u>	<u>Nikita</u>
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5	Jejurkar Rushikesh	<u>Rushikesh</u>	<u>Rushikesh</u>	<u>Rushikesh</u>	<u>Rushikesh</u>	<u>Rushikesh</u>
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12	Jamdar Arti Macchindra	<u>Arti</u>	<u>Arti</u>	<u>Arti</u>	<u>Arti</u>	<u>Arti</u>
13	Jorvekar Pratiksha Santosh	<u>Pratiksha</u>	<u>Pratiksha</u>	<u>Pratiksha</u>	<u>Pratiksha</u>	<u>Pratiksha</u>
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16	Gawali Harshad Vilas	<u>Harshad</u>	<u>Harshad</u>	<u>Harshad</u>	<u>Harshad</u>	<u>Harshad</u>
17	Jore Sagar Balasaheb	<u>Sagar</u>	<u>Sagar</u>	<u>Sagar</u>	<u>Sagar</u>	<u>Sagar</u>
18	Dighe Shubhangi Arjun	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>	<u>Shubhangi</u>
19	Adhav Purvija Satish	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>
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23	Shelke Pooja Nitin	<u>Pooja</u>	<u>Pooja</u>	<u>Pooja</u>	<u>Pooja</u>	<u>Pooja</u>

Class: T.Y.B.Sc. Attendance: 2019-2020



Rayat shikshan Sanstha's
SSGM College, Kopergaon

Short term Course: Instrumental Methods of chemical Analysis

Sr No	Name of Students	Date:				
		1	2	3	4	5
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3	Ghumare Nikita	Ghumare	Ghumare	Ghumare	Ghumare	Ghumare
4	Nitin More	Nitin	Nitin	Nitin	Nitin	Nitin
5	Jejurkar Rushikesh	Rushikesh	Rushikesh	Rushikesh	Rushikesh	Rushikesh
6	Nagare Akshay	Akshay	Akshay	Akshay	Akshay	Akshay
7	Rahane Shital	Rahane	Rahane	Rahane	Rahane	Rahane
8	Pachore Priyanka	Pachore	Pachore	Pachore	Pachore	Pachore
9	Bolij Shraddha	Bolij	Bolij	Bolij	Bolij	Bolij
10	Mahale Vaishnavi	Mahale	Mahale	Mahale	Mahale	Mahale
11	Madhavai Artee Dattatray	Madhavai	Madhavai	Madhavai	Madhavai	Madhavai
12	Jamdar Arti Macchindra	Jamdar	Jamdar	Jamdar	Jamdar	Jamdar
13	Jorvekar Pratiksha Santosh	Jorvekar	Jorvekar	Jorvekar	Jorvekar	Jorvekar
14	Deokar Shubhangi Rajendra	Deokar	Deokar	Deokar	Deokar	Deokar
15	Deokar Priyanka Dinkar	Deokar	Deokar	Deokar	Deokar	Deokar
16	Gawali Harshad Vilas	Gawali	Gawali	Gawali	Gawali	Gawali
17	Jore Sagar Balasaheb	Jore	Jore	Jore	Jore	Jore
18	Dighe Shubhangi Arjun	Dighe	Dighe	Dighe	Dighe	Dighe
19	Adhav Purvija Satish	Purvija	Purvija	Purvija	Purvija	Purvija
20	Teke Kaveri Sahebrao	Teke	Teke	Teke	Teke	Teke
21	Pawar Prajakta Ajaikumar	Prajakta	Prajakta	Prajakta	Prajakta	Prajakta
22	More Priyanka Raghunath	Priyanka	Priyanka	Priyanka	Priyanka	Priyanka
23	Shelke Pooja Nitin	Shelke	Shelke	Shelke	Shelke	Shelke

Class: T.Y.B.Sc. Attendance: 2019-2020



Rayat shikshan Sanstha's
SSGM College, Kopergaon

Short term Course: Instrumental Methods of chemical Analysis

Sr No	Name of Students	Date:				
		1	2	3	4	5
1	Dodiyal Simranjeet	<u>Dodiyal</u>	<u>Dodiyal</u>	<u>Dodiyal</u>	<u>Dodiyal</u>	<u>Dodiyal</u>
2	Ghumare Nisha	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>
3	Ghumare Nikita	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>
4	Nitin More	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>
5	Jejurkar Rushikesh	<u>Jejurkar</u>	<u>Jejurkar</u>	<u>Jejurkar</u>	<u>Jejurkar</u>	<u>Jejurkar</u>
6	Nagare Akshay	<u>Nagare</u>	<u>Nagare</u>	<u>Nagare</u>	<u>Nagare</u>	<u>Nagare</u>
7	Rahane Shital	<u>Rahane</u>	<u>Rahane</u>	<u>Rahane</u>	<u>Rahane</u>	<u>Rahane</u>
8	Pachore Priyanka	<u>Pachore</u>	<u>Pachore</u>	<u>Pachore</u>	<u>Pachore</u>	<u>Pachore</u>
9	Bolij Shradha	<u>Bolij</u>	<u>Bolij</u>	<u>Bolij</u>	<u>Bolij</u>	<u>Bolij</u>
10	Mahale Vaishnavi	<u>Mahale</u>	<u>Mahale</u>	<u>Mahale</u>	<u>Mahale</u>	<u>Mahale</u>
11	Madhavai Artee Dattatray	<u>Madhavai</u>	<u>Madhavai</u>	<u>Madhavai</u>	<u>Madhavai</u>	<u>Madhavai</u>
12	Jamdar Arti Macchindra	<u>Jamdar</u>	<u>Jamdar</u>	<u>Jamdar</u>	<u>Jamdar</u>	<u>Jamdar</u>
13	Jorvekar Pratiksha Santosh	<u>Jorvekar</u>	<u>Jorvekar</u>	<u>Jorvekar</u>	<u>Jorvekar</u>	<u>Jorvekar</u>
14	Deokar Shubhangi Rajendra	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>
15	Deokar Priyanka Dinkar	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>
16	Gawali Harshad Vilas	<u>Gawali</u>	<u>Gawali</u>	<u>Gawali</u>	<u>Gawali</u>	<u>Gawali</u>
17	Jore Sagar Balasaheb	<u>Jore</u>	<u>Jore</u>	<u>Jore</u>	<u>Jore</u>	<u>Jore</u>
18	Dighe Shubhangi Arjun	<u>Dighe</u>	<u>Dighe</u>	<u>Dighe</u>	<u>Dighe</u>	<u>Dighe</u>
19	Adhav Purvija Satish	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>	<u>Purvija</u>
20	Teke Kaveri Sahebrao	<u>Teke</u>	<u>Teke</u>	<u>Teke</u>	<u>Teke</u>	<u>Teke</u>
21	Pawar Prajakta Ajaikumar	<u>Pawar</u>	<u>Pawar</u>	<u>Pawar</u>	<u>Pawar</u>	<u>Pawar</u>
22	More Priyanka Raghunath	<u>More</u>	<u>More</u>	<u>More</u>	<u>More</u>	<u>More</u>
23	Shelke Pooja Nitin	<u>Shelke</u>	<u>Shelke</u>	<u>Shelke</u>	<u>Shelke</u>	<u>Shelke</u>

Class: T.Y.B.Sc. Attendance: 2019-2020



Rayat shikshan Sanstha's
SSGM College, Kopergaon

Short term Course: Instrumental Methods of chemical Analysis (Practical)

Sr No	Name of Students	Date:					
		1	2	3	4	5	6
1	Dadiyal Simranjeet	<u>Dadiyal</u>	<u>Dadiyal</u>	<u>Dadiyal</u>	<u>Dadiyal</u>	<u>Dadiyal</u>	<u>Dadiyal</u>
2	Ghumare Nisha	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>
3	Ghumare Nikita	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>	<u>Ghumare</u>
4	Nitin More	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>	<u>Nitin</u>
5	Jejurkar Rushikesh	<u>Jejurkar</u>	<u>Jejurkar</u>	<u>Jejurkar</u>	<u>Jejurkar</u>	<u>Jejurkar</u>	<u>Jejurkar</u>
6	Nagare Akshay	<u>Nagare</u>	<u>Nagare</u>	<u>Nagare</u>	<u>Nagare</u>	<u>Nagare</u>	<u>Nagare</u>
7	Rahane Shital	<u>Rahane</u>	<u>Rahane</u>	<u>Rahane</u>	<u>Rahane</u>	<u>Rahane</u>	<u>Rahane</u>
8	Pachore Priyanka	<u>Pachore</u>	<u>Pachore</u>	<u>Pachore</u>	<u>Pachore</u>	<u>Pachore</u>	<u>Pachore</u>
9	Bolij Shraddha	<u>Bolij</u>	<u>Bolij</u>	<u>Bolij</u>	<u>Bolij</u>	<u>Bolij</u>	<u>Bolij</u>
10	Mahale Vaishnavi	<u>Mahale</u>	<u>Mahale</u>	<u>Mahale</u>	<u>Mahale</u>	<u>Mahale</u>	<u>Mahale</u>
11	Madhavai Artee Dattatray	<u>Madhavai</u>	<u>Madhavai</u>	<u>Madhavai</u>	<u>Madhavai</u>	<u>Madhavai</u>	<u>Madhavai</u>
12	Jamdar Arti Macchindra	<u>Jamdar</u>	<u>Jamdar</u>	<u>Jamdar</u>	<u>Jamdar</u>	<u>Jamdar</u>	<u>Jamdar</u>
13	Jorvekar Pratiksha Santosh	<u>Jorvekar</u>	<u>Jorvekar</u>	<u>Jorvekar</u>	<u>Jorvekar</u>	<u>Jorvekar</u>	<u>Jorvekar</u>
14	Deokar Shubhangi Rajendra	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>
15	Deokar Priyanka Dinkar	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>	<u>Deokar</u>
16	Gawali Harshad Vilas	<u>Gawali</u>	<u>Gawali</u>	<u>Gawali</u>	<u>Gawali</u>	<u>Gawali</u>	<u>Gawali</u>
17	Jore Sagar Balasaheb	<u>Jore</u>	<u>Jore</u>	<u>Jore</u>	<u>Jore</u>	<u>Jore</u>	<u>Jore</u>
18	Dighe Shubhangi Arjun	<u>Dighe</u>	<u>Dighe</u>	<u>Dighe</u>	<u>Dighe</u>	<u>Dighe</u>	<u>Dighe</u>
19	Adhav Purvija Satish	<u>Adhav</u>	<u>Adhav</u>	<u>Adhav</u>	<u>Adhav</u>	<u>Adhav</u>	<u>Adhav</u>
20	Teke Kaveri Sahebrao	<u>Teke</u>	<u>Teke</u>	<u>Teke</u>	<u>Teke</u>	<u>Teke</u>	<u>Teke</u>
21	Pawar Prajakta Ajaikumar	<u>Pawar</u>	<u>Pawar</u>	<u>Pawar</u>	<u>Pawar</u>	<u>Pawar</u>	<u>Pawar</u>
22	More Priyanka Raghunath	<u>More</u>	<u>More</u>	<u>More</u>	<u>More</u>	<u>More</u>	<u>More</u>
23	Shelke Pooja Nitin	<u>Shelke</u>	<u>Shelke</u>	<u>Shelke</u>	<u>Shelke</u>	<u>Shelke</u>	<u>Shelke</u>

Class: T.Y.B.Sc. Attendance: 2019-2020



Rayat shikshan Sanstha's
SSGM College, Kopergaon

Short term Course: Instrumental Methods of chemical Analysis (Practical)

Sr No	Name of Students	Date:			
		1	2	3	4
1	Dodiyal Simranjeet	Dodiyal	Dodiyal	Dodiyal	Dodiyal
2	Ghumare Nisha	Ghumare	Ghumare	Ghumare	Ghumare
3	Ghumare Nikita	Ghumare	Ghumare	Ghumare	Ghumare
4	Nitin More	Nitin	Nitin	Nitin	Nitin
5	Jejurkar Rushikesh	Jejurkar	Jejurkar	Jejurkar	Jejurkar
6	Nagare Akshay	Nagare	Nagare	Nagare	Nagare
7	Rahane Shital	Rahane	Rahane	Rahane	Rahane
8	Pachore Priyanka	Pachore	Pachore	Pachore	Pachore
9	Bolij Shraddha	Bolij	Bolij	Bolij	Bolij
10	Mahale Vaishnavi	Mahale	Mahale	Mahale	Mahale
11	Madhavai Artee Dattatray	Madhavai	Madhavai	Madhavai	Madhavai
12	Jamdar Arti Macchindra	Jamdar	Jamdar	Jamdar	Jamdar
13	Jorvekar Pratiksha Santosh	Jorvekar	Jorvekar	Jorvekar	Jorvekar
14	Deokar Shubhangi Rajendra	Deokar	Deokar	Deokar	Deokar
15	Deokar Priyanka Dinkar	Deokar	Deokar	Deokar	Deokar
16	Gawali Harshad Vilas	Gawali	Gawali	Gawali	Gawali
17	Jore Sagar Balasaheb	Jore	Jore	Jore	Jore
18	Dighe Shubhangi Arjun	Dighe	Dighe	Dighe	Dighe
19	Adhav Purvija Satish	Purvija	Purvija	Purvija	Purvija
20	Teke Kaveri Sahebrao	Teke	Teke	Teke	Teke
21	Pawar Prajakta Ajaikumar	Prawar	Prawar	Prawar	Prawar
22	More Priyanka Raghunath	More	More	More	More
23	Shelke Pooja Nitin	Shelke	Shelke	Shelke	Shelke

Class: T.Y.B.Sc. Attendance: 2019-2020



Rayat Shikshan Sanstha's
S.S.G.M. College, Kopergaon, Dist- Ahmednagar
Department of Chemistry
2019-20

CERTIFICATE COURSE IN INSTRUMENTAL METHODS IN CHEMICAL
ANALYSIS
Question Paper

Mark :- 50 Mark

Q.1. Multiple Choice Questions & Answers (MCQs) Each Carry 2 Mark

1. Spectroscopy deals with interaction of electromagnetic radiation with matter. What is the speed of this radiation in vacuum in m/s?
 - a) 6×10^8
 - b) 5×10^8
 - c) 7×10^8
 - d) 3×10^8
2. Which type of Quantum Transition takes place in Ultra Violet and Visible spectroscopy?
 - a) Rotation of molecules
 - b) Nuclear
 - c) Bonding electrons
 - d) Spin of nuclei in a magnetic field
3. Which of the following is not a property or parameter of electromagnetic radiation?
 - a) Wavelength
 - b) Voltage
 - c) Wave number
 - d) Amplitude
4. Which of the following is not a type of Spectroscopy?
 - a) Gamma ray
 - b) X ray
 - c) Nuclear magnetic resonance
 - d) Sound
5. Which of the following is the wavelength of microwave radiation?
 - a) 10 – 780nm
 - b) 0.78 – 30 μ m
 - c) 0.6 – 10 m
 - d) 0.75 – 3.75 mm
6. Which of the following is the principle of Flame emission photometers?
 - a) Radiation is absorbed by non-excited atoms in vapour state and are excited to higher states
 - b) Medium absorbs radiation and transmitted radiation is measured
 - c) Colour and wavelength of the flame is measured
 - d) Only wavelength of the flame is measured
7. In Flame emission photometers, the measurement of _____ is used for qualitative analysis.
 - a) Colour
 - b) Intensity
 - c) Velocity
 - d) Frequency



8. Which of the following is not a detector used in Flame emission photometers?
- Photronic cell
 - Photovoltaic cell
 - Photoemissive tube
 - Chromatogram
9. Which of the following is not a feature of carrier gas used in gas chromatography?
- It must be chemically inert
 - It should be suitable for the detector employed
 - It should not be completely pure
 - It should be cheap
10. Which of the following is the commonly used support material for the packed column in gas chromatography?
- Glass
 - Metal
 - Diatomaceous earth
 - Stainless steel
11. Which of the following is not a detector used in mid Infrared Spectrophotometer?
- Thermopile
 - Thermistor
 - Pyroelectric cell
 - Golay cell
12. Which of the following is used as a source in the simple infrared analyzer for gas analysis?
- Tungsten filament lamp
 - Nernst glower
 - Hot-wire spiral
 - Mercury arc lamp
13. Which of the following is the principle of Atomic Absorption Spectroscopy?
- Radiation is absorbed by non-excited atoms in vapour state and are excited to higher states
 - Medium absorbs radiation and transmitted radiation is measured
 - Colour is measured
 - Colour is simply observed
14. In Atomic Absorption Spectroscopy, which of the following is the generally used radiation source?
- Tungsten lamp
 - Xenon mercury arc lamp
 - Hydrogen or deuterium discharge lamp
 - Hollow cathode lamp
15. Which of the following is the function of the Flame or Emission system in Atomic Absorption Spectroscopy?
- To split the beam into two
 - To break the steady light into pulsating light
 - To filter unwanted components
 - To reduce the sample into atomic state
16. Which of the following is not a fuel used in flame photometry?
- Acetylene
 - Propane
 - Hydrogen
 - Camphor oil



17. Which of the following is not true about Fourier Transform Infrared (FTIR) spectrometer?
- It is of non-dispersive type
 - It is useful where repetitive analysis is required
 - Size has been reduced over the years
 - Size has increased over the years
18. Which of the following is not the advantage of Fourier Transform Spectrometers?
- Signal to noise ratio is high
 - Information could be obtained on all frequencies
 - Retrieval of data is possible
 - Easy to maintain
19. In Michelson's interferometer, the frequency of the detector output can be determined by translating the _____ of movable mirror and the _____ of monochromatic radiation.
- Velocity, wavelength
 - Thickness, intensity
 - Length, velocity
 - Angle, intensity
20. Which of the following is the formula for pH calculation?
- $\log_{10}[\text{H}^+]$
 - $-\log_{10}[\text{H}^+]$
 - $\log_2[\text{H}^+]$
 - $-\log_2[\text{H}^+]$
21. pH meters can be considered as voltage sources with which of the following internal resistances?
- Very low resistance
 - Moderate resistance
 - Very high resistance
 - No resistance
22. Which of the following is not a failure in pH meters?
- Defective electrodes
 - Defective input circuitry
 - Defective electronic circuitry
 - Defective calibration
23. Which of the following is the simplest of pH meters?
- Null-detector type pH meter
 - Direct reading type pH meter
 - Digital pH meter
 - Modern pH meter
24. Fourier transform NMR spectrometer has which of the following characteristics?
- Increased sensitivity, long time to obtain data
 - Decreased sensitivity, long time to obtain data
 - Increased sensitivity, reduced time to obtain data
 - Decreased sensitivity, reduced time to obtain data
25. Only _____ percent of the effluent of the liquid chromatography must be introduced in the mass spectrometer.
- 1-2 %
 - 1-5 %
 - 1-20 %
 - 1-15 %



S.S.G.M. College Kopargaon
Short Term Course of Instrumental Methods of Chemical Analysis 2019-20
Mark list of students

Sr.No.	Name of the Student	Marks	Result
1.	Dadiyal Simranjeet	28	Pass
2.	Ghumare Nisha	32	Pass
3.	Ghumare Nikita	34	Pass
4.	More Nitin	37	Pass
5.	Jejurkar Rushikesh	24	Pass
6.	Nagare AKSHAY	32	Pass
7.	Rahane shital	32	Pass
8.	Pachore Priyanka	33	Pass
9.	Bolij Shradha	28	Pass
10.	Mahale Vaishnavi	36	Pass
11.	Madhvai Artee Dattatray	35	Pass
12.	Jamdar Arti Machindra	34	Pass
13.	Jorvekar Pratiksha Santosh	28	Pass
14.	Deokar Shubhangi Rajendra	34	Pass
15.	Deokar Priyanka Dinkar	33	Pass
16.	Gawali Harshad Vilas	25	Pass
17.	Jore Sagar Balasaheb	28	Pass
18.	Dighe Shubhangi Arjun	26	Pass
19.	Adhav Purvija Suresh	29	Pass
20.	Teke Kaveri Sahebrao	29	Pass
21.	Pawar Prajakta ajaykumar	30	Pass
22.	More Priyanka Raghunath	32	Pass
23.	Shelke Pooja Nitin	33	Pass





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Rayat Shikshan Sanstha's
S.S.G.M.College, Kopargaon
Dist.-Ahmednagar

Certificate Course

Feedback Form (Year 2019-20)

How you like this activity?

(Please tick (✓) on the appropriate option)

Criteria's	Excellent	Very Good	Good	Average	Poor
Content of the curriculum			✓		
Quality of Lectures			✓		
Quality of Practical's			✓		
Arrangement of Tour and hands on training collaboratively organized			✓		
Is the course is applicable for entrepreneurship development in your future life			✓		
Overall Evaluation of the Course			✓		
Is the course is beneficial for students & Parents as far as environment & Crop production is concerned			✓		
Any Suggestions:					

Name of the Students: Deokar Shubhangi Rajendra.

Class: T.Y. Bsc.

Signature: [Signature]





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Rayat Shikshan Sanstha's
S.S.G.M.College, Kopargaon
Dist.-Ahmednagar

Certificate Course

Feedback Form (Year 2019-20)

How you like this activity?

(Please tick (✓) on the appropriate option)

Criteria's	Excellent	Very Good	Good	Average	Poor
Content of the curriculum					
Quality of Lectures	✓	✓			
Quality of Practical's					
Arrangement of Tour and hands on training collaboratively organized			✓		
Is the course is applicable for entrepreneurship development in your future life					
Overall Evaluation of the Course		✓			
Is the course is beneficial for students & Parents as far as environment & Crop production is concerned			✓		
Any Suggestions:					

Name of the Students: Bolij shraddha Sanjay

Class: Ty BSc

Signature: Bolij



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Rayat Shikshan Sanstha's
S.S.G.M.College, Kopargaon
Dist.-Ahmednagar

Certificate Course

Feedback Form (Year 2019-20)

How you like this activity?

(Please tick (✓) on the appropriate option)

Criteria's	Excellent	Very Good	Good	Average	Poor
Content of the curriculum					
Quality of Lectures		✓			
Quality of Practical's	✓				
Arrangement of Tour and hands on training collaboratively organized		✓			
Is the course is applicable for entrepreneurship development in your future life	✓				
Overall Evaluation of the Course		✓			
Is the course is beneficial for students & Parents as far as environment & Crop production is concerned	✓				
Any Suggestions:					

Name of the Students: Ghumare Nikita Vishnu.

Class: T.Y.BSc

Signature:



“Education Through Self - Help is our Motto” - Karmaveer

Rayat Shikshan Sanstha's

**Shri Sadguru Gangageer Maharaj Science,
Gautam Arts & Sanjivani Commerce College**



Kopargaon, Dist. Ahmednagar (M.S.)

Short Term Course

CERTIFICATE OF COMPLETION

This is to Certify that Shri/Kum. _____
of Class _____ has Completed Short Term Course in _____
_____ conducted by the department of _____
during the academic year 201 /201

Course Co-ordinator

Co-ordinator

Principal



Shoodh Advantech,

visit at - - -



Handelily & Instruments



9/10/

SSGM College, Kopargaon

Department of Chemistry, Class: T. Y. B.Sc.

2019-20

Date- 10/08/2019

**Short Term Course- A Certificate Course in Instrumental Methods of
Chemical Analysis
Meeting Notice**

Department of Chemistry conducts a short term course in instrumental methods of Chemical Analysis for T.Y.B.Sc. Students, the syllabus and working hours have been discussed and a complete programme has been prepared. Following members are requested to attend the meeting for the implementation of these academic year 2019-2020. The meeting will be held in Department of Chemistry


Course Coordinator,

Committee Members:

1. Prof. S. C. Jawale
2. Prof. R. M. Dawange
3. Prof. D. N. Gaikwad
4. Dr. D. M. Suryavanshi
5. Dr. N. M. Chavhan




Head,

HEAD
Department of Chemistry
S. S. G. M. College, Kopargaon.

Rayat Shikshan Sanstha's
SSGM College, Kopargaon
Department of Chemistry Class: T.Y. B.Sc.
Date: 11/08/2019

Short Term Course- A certificate Course in Instrumental Method of
Chemical Analysis
Minutes of Meeting

The meeting of the Short Term Course Committee has been conducted on
10/08/2019 at Department of Chemistry. In the meeting the following
resolutions and decisions were made:

1. It was decided to revise the syllabus of Short term Course- A Certificate Course in Instrumental Method of Chemical Analysis.
2. For conducting the course the complete program of Theory and Practicals was designed.
3. As per the requirements of completion of the syllabus of the short term course the working hours were decided.


Course Co-ordinator,




Head
HEAD
Department of Chemistry
Deptt. Of Chemistry
S. S. G M. College, Kopargaor.

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Rayat Shikshan Sanstha's
SSGM College, Kopargaon
Department of Chemistry,
Class- T. Y. B.Sc.
2019-2020

Short Term Course- A Certificate Course in Instrumental Methods of
Chemical Analysis

Notice


Date: 10/08/2019

All Students of T.Y. B.Sc. Class who have enrolled for Short Term Course
"Instrumental Methods of Chemical Analysis" will have their lectures from
03-12-2019 at 2.30 pm. The attendance to the lectures are compulsory.

Venue: Hall No. :- A-102


Course Coordinator,




Head,
HEAD
Department of Chemistry.
Deptt. Of Chemistry
S. S. G. M. College, Kopargaon

Rayat Shikshan Sanstha's
Shri Sadguru Gangageer Maharaj Science, Gautam Arts & Sanjivani Commerce
College, Kopargaon. Dist-Ahmednagar-423601.

Report (2019-20)

The department of chemistry conducted a Short Term Course entitled **Instrumental Methods in Chemical Analysis**. Total 23 students of T. Y. B. Sc. Chemistry were admitted in the course. The duration of course was three months. The course was conducted satisfactorily by the Department of Chemistry.




Head
Department of Chemistry
S.S.G.M. College, Kopargaon
Head,
Department of Chemistry,
S.S.G.M. College, Kopargaon.