

DEPARTMENT OF CHEMISTRY

CERTIFICATE COURSE ON

ACADEMIC YEAR

2020-2021



GDC PALAKONDA

SRIKAKULAM DISTRICT



**GOVERNMENT DEGREE COLLEGE
PALAKONDA
SRILAKULAM DISTRICT**

**CERTIFICATE COURSE ON ANALYTICAL
TECHNIQUES**



Duration of the course: 30 Hrs
08/Mar/2021
To
19/April/2021

**ORGANIZED BY DEPARTMENT OF
CHEMISTRY**

Instruction to the Students :

- 75 % of course attendance compulsory to get the certificate.
- Students who will get 40 % of marks in the examination they will eligible to get certificate.

Sri.S.Jaganmohana

(Course Coordinator)

**Kum.M.Prasanthi ,
(Faculty)**

GOVERNMENT DEGREE COLLEGE- PALAKONDA
DEPARTMENT OF CHEMISTRY

Palakonda,
Date :01/03/2021.

To
The Principal,
Govt. Degree College,
Palakonda,
Srikakulam Dist.

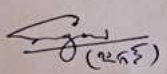
Respected sir,

We, the faculty members of Department of Chemistry submit your notice that we would like to conduct a Certificate course on "Analytical Techniques in Chemistry" for B.Sc. students with the duration of 30 Days.

Hence we humbly request you to accord permission to initiate the certificate course in our department.

Thanking you sir,

Yours faithfully,



LECTURER IN CHEMISTRY

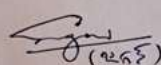
GOVERNMENT DEGREE COLLEGE-PALAKONDA
DEPARTMENT OF CHEMISTRY

CIRCULAR

Date: 03/03/2021.

The Department of Chemistry is planning to conduct a certificate course on "Analytical Techniques in Chemistry" for B.Sc. students. Hence the interested candidates are advised to meet the In-charge or other faculty members of Department of Chemistry on or before 06/03/2021.

Participation/merit certificate will be issued to individual after completion of the course. The course will be starts from 08/03/2021.



LECTURER IN CHEMISTRY

Lecturer in-charge
Department of Chemistry

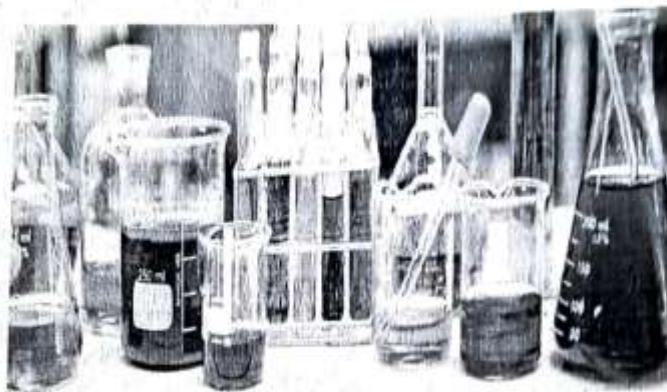


PRINCIPAL
Govt. Degree College
PALAKONDA
Sri Kalahasti District

Principal
GDC, Palakonda

DEPARTMENT OF CHEMISTRY

CERTIFICATE COURSE ON ANALYTICAL TECHNIQUES



2020-2021

**GOVERNMENT DEGREE COLLEGE
PALAKONDA**



SRIKAKULAM DISTRICT

M.Prasanthi

COURSE CO-ORDINATOR

S.Jaganmohana Rao

Department In-Charge

Dr.P.Krishna Rao

PRINCIPAL

INTRODUCTION :

Analytical Chemistry is an important branch of Chemistry that deals with the qualitative and quantitative analysis of substances. It introduces the methods and tools used to separate various substances and the application of these techniques to identify and quantify the amount of substances present for a given condition.

The Qualitative analysis deals with the determination of the quality of a substance in a given sample. It does not consider the concentration or quantity of the substances given. The qualitative analysis of substances can be carried out in several ways, like flame tests, chemical tests, etc. Mostly, these methods are used in salt analysis experiments.

This Quantitative analysis is used to determining the absolute or relative quantities of substances present in a given sample of a chemical compound or mixture. Volumetric analysis and gravimetric analysis are two examples of quantitative analysis.

The qualitative analysis tells us the chemical substances present in the sample, and the quantitative analysis tells us the exact amount of the identified substances present in the sample.

The instruments required for the analysis of chemical substances have high-cost constraints. However, these modern techniques and scientific instruments are widely used in industries like food, pharmaceutical, agricultural, etc.

LEARNING OBJECTIVES :

The primary objective of this course is to acquire basic concepts ,principles, and techniques of modern analytical chemistry that would empower students with an analytical mind set and the abilities to solve diverse analytical problems in an efficient and quantitative way that convey the importance of accuracy and precision of the analytical results. On successful completion of this course , students will be able :

- **To develop an understanding of the range and uses of analytical methods in chemistry.**
- **To establish an appreciation of the role of chemistry in quantitative analysis.**
- **To provide an understanding of chemical methods employed for elemental and compound analysis.**
- **To develop an understanding of the board role of the chemist in measurement and problem solving for analytical tasks.**

COURSE OUTCOMES :

- Understand the fundamentals of analytical chemistry and steps of a characteristic analysis.
- Express the role of analytical chemistry in science.
- Estimate types of errors in chemical analysis.
- Identifies the detection limit.
- Interpret the complexometric titrations.
- Express the terms such as standard solution , titration, back titration, equivalence point, end point..
- Solve the volumetric calculations.
- Express the titrimetric analysis methods.

COURSE STRUCTURE :

1. Duration of module Training: 30 hrs
2. Entry Qualification: B.Sc.students
3. Language: English and Telugu
4. Teaching mode: Offline / Online.

Distribution of training on hourly basis:

S. No	Components to be covered	Duration (hours)	Theory	Days
1	Introduction to Laboratory Equipment	1	1	1
2	Basic Principles and laboratory Techniques	9	9	9
3	Qualitative Analysis	9	9	9
4	Quantitative Analysis	9	9	9
5	Review and Assessment	2	2	2
	Total	30	30	30

syllabus :

➤ Basic Principles and laboratory Techniques

1. Chemical Concentrations
2. Preparations of Solutions
3. Introduction to Analytical Chemistry
4. Errors in Chemical Analysis

➤ Qualitative Analysis:

1. Salt Mixture Analysis: Identification and Conformation of Anions and Cations

➤ Quantitative Analysis:

1. Volumetric Analysis: Acid-Base Titrations, Redox Titrations and Complexometric Titrations.
2. Gravimetric Analysis

INSTRUCTION METHODS

Some of the following methods are adopted.

1. Lecture
2. Video lesson
3. Demonstrations
4. Group discussions

ASSESSMENT

1. Assignments: 40%
2. Course End Examination: 60%

Assessment Mode: Descriptive and multiple-choice answers

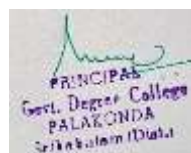
Examination conduction: Offline

The syllabus for value added course on "Analytical techniques in chemistry" is hereby approved for the session 2020-2021.



Course coordinator

Head of the Department



Principal

Registrations

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SNO	NAME OF THE STUDENT	COURSE YEAR / COURSE / GROUP	DATE OF REGISTRATION	SIGNATURE OF THE CANDIDATE
1.	K. prasannakumari	III B.Sc. M.P.C.	4/3/2021	K. prasannakumari
2.	P. Sravani	III B.Sc. MPC	4/3/2021	P. Sravani
3.	p. Hema prasad	III B.Sc MPC	4/3/2021	p. Hema prasad
4.	ch. Navatha	III BSC CBZ	4/3/2021	ch. Navatha
5.	R. Neelima	III BSC CBZ	4/3/2021	R. Neelima
6.	A. sandhya rani	II BSC MPC	4/3/2021	A. sandhya rani
7.	A. Ranya	II BSC MPC	4/3/2021	A. Ranya
8.	A. kousalya	II BSC MPC	4/3/2021	A. kousalya
9.	B. padmavathi	II B.Sc MPC	4/3/2021	B. padmavathi
10.	B. RAJ KUMAR	II B.Sc MPC	5/3/2021	B. RAJ KUMAR
11.	U. sandhya Rani	II B.Sc MPC	5/3/2021	U. sandhya
12.	K. Mohan	II B.Sc MPC	5/3/2021	K. Mohan
13.	R. Ganesh	II B.Sc MPC	5/3/2021	R. Ganesh
14.	M. Himaja	II B.Sc MPC	5/3/2021	M. Himaja
15.	G. Bala Sureswathi	II B.Sc CBZ	5/3/2021	G. Sureswathi
16.	P. Geethangali	II B.Sc CBZ	5/3/2021	P. Geethangali
17.	m. Gowthami	II BSC CBZ	5/3/2021	m. Gowthami
18.	T. Santhoshi	II BSC CBZ	5/3/2021	T. Santhoshi
19.	V. Mounika	II B.Sc CBZ	5/3/2021	V. Mounika
20.	U. Charishma	III BSC MPC	6/3/2021	U. Charishma
21.	L. vandana	III B.Sc MPC	6/3/2021	L. vandana
22.	S. Uma mahesh	III B.Sc MPC	6/3/2021	S. umamahesh
23.	P. Jagadeesh	II BSC MPC	6/3/2021	P. Jagadeesh
24.	M. Gayamala	II BSC MPC	6/3/2021	M. Gayamala
25.	M. Dilip	II BSC MPC	6/3/2021	M. Dilip
26.	m. Parvathi	II BSC MPC	6/3/2021	m. Parvathi
27.	T. Surapamidi	II B.Sc MPC	6/3/2021	T. surapamidi
28.	V. Triveni	II B.Sc MPC	6/3/2021	V. Triveni
29.	U. Rajeswari	II B.Sc MPC	6/3/2021	U. Rajeswari
30.	S. Neelima	II B.Sc MPC	6/3/2021	S. Neelima

GOVERNMENT DEGREE COLLEGE-PALAKONDA
DEPARTMENT OF CHEMISTRY

Course : Analytical Techniques in Chemistry
Course End Examination, April - 2021

Time : 2 hrs

Max.Marks:30

PART-A

Answer any four of the following questions

4x5=20 Marks

1. Describe the preparation of 250 ml, 0.05 M NaCO_3 Standard solution ?
2. Write the types of errors in Quantitative Analysis ?
3. Write the identification tests for Chloride & Sulphate ?
4. Give a brief account on Acid-Base titrations ?
5. Define Accuracy and Precision ?

PART-B

Answer the following

10x1=10 Marks

1. The Units for Molarity is _____.
2. Formula for calculating Normality is _____
3. Nessler's Reagent is used to identify the _____ ion.
4. Self indicator takes place in _____ titration.
5. Indicator is used to determine the _____
6. The concentration of solutions can be measured as ()
a. Normality b. Molarity c. Molality d. All
7. How many grams of NaOH is used to prepare 250 ml , 0.1 N Solution ()
a. 1 g b. 2 g c. 3 g d. 4 g
8. Among the following which salt having color? ()
a. MgSO_4 b. CaSO_4 c. CuSO_4 d. BaSO_4
9. EBT Indicator is used in _____ Titration ()
a. Acid-Base b. Redox c. Precipitation d. Complexometric
10. Which one of the following is self indicator ()
a. Methyl orange b. Phenolphthalein c. Potassium permanganate
d. All



GOVERNMENT DEGREE COLLEGE PALAKONDA

Affiliated to Dr BR AMBEDKAR UNIVERSITY, SRIKAKULAM

Accredited by NAAC with GRADE B



Certificate of Appreciation



This is to certify that Sri/ Smt/ kum M. Gowthami,
II CBZ, Government Degree College, Palakonda has successfully completed
Certificate course on "Analytical Techniques in Chemistry" conducted
by Department of Chemistry on 19/04/21 with Satisfactory
certificate ID: CHECCAT013


LECTURER IN CHEMISTRY


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