P. R. GOVERNMENT COLLEGE (A), KAKINADA

B. Sc. (Analytical Chemistry)

SEMESTER –VI

PAPER – VII: ANALYTICAL CHEMISTRY -7

(ELECTIVE)

ANALYSIS OF APPLIED INDUSTRIAL PRODUCTS **45 hrs. (3 h /w)**

UNIT-I

9hrs

ANALYSIS OF SOAPS, DETERGENTS AND PAINTS

A. **Analysis of soaps**: Moisture and volatile matter, combined alkali, total fatty matter, free alkali, total fatty acid, sodium silicate and chlorides.

B. **Analysis of paints**: Vehicle and pigments, Barium Sulphate, total lead, lead chromate, iron pigments, zinc chromate.

UNIT-II

9 hrs

ANALYSIS OF FATS & OILS AND INDUSTRIAL SOLVENTS

A. **Analysis of oils**: Saponification value, iodine value, acid value, ester value, bromine value, acetyl value.

B. **Analysis of industrial solvents** like benzene, acetone, methanol and acetic acid, Determination of methoxyl and N-methyl groups.

UNIT-III

9hrs

ANALYSIS OF FERTILIZERS, STARCH, SUGARS AND PAPER

A. **Analysis of Fertilizers**: Urea, NPK fertilizer, Super phosphate

B. Analysis of DDT, BHC, Endrin

C. Analysis of Starch, Sugars and Paper

UNIT–IV

9 hrs.

ANALYSIS OF GASES

A. **Analysis of Gases**: Carbon dioxide, carbon monoxide, oxygen, hydrogen, saturated hydro carbons, unsaturated hydrocarbons, nitrogen, Octane number, Cetane number

B. **Analysis of Fuel gases** like: water gas, producer gas.

C. **Ultimate analysis**: Carbon, hydrogen, nitrogen, oxygen, Phosphorus and sulfur.

UNIT–V

9 hrs.

ANALYSIS OF COMPLEX MATERIALS:

A. Analysis of cement- Loss on ignition, insoluble residue, total silica, sesqui oxides, lime, magnesia, ferric oxide, sulphuric anhydride.

B. Analysis of glasses - Determination of silica, Sulphur, barium, arsenic, antimony, total R_2O_3, calcium, magnesium, total alkalis, aluminum, chloride, fluoride

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SEMESTER –VI

PAPER – VII: ANALYTICAL CHEMISTRY -7

(ELECTIVE)

Practical-VII Analysis of Applied Industrial Products **30** hrs. (2 h /w) Max.Marks : 50 M

Analysis of Heavy & Fine Chemicals:

1. Preparation of soaps and detergents.
2. Assay of soaps and detergent
3. Determination of Na/K/Li/Ca in given sample by flame photometry method.
4. Preparation and characterization of copper sulphate.
5. Preparation and characterization of methyl orange and methyl red.
6. Estimation of $Na_2CO_3.10H_2O$ in washing soda.
7. Determination of total hardness (Ca^{+2}& Mg^{+2}) present in the water sample
8. Determination of Chloride($Cl^{-)}$ content present in the water sample
9. Determination of concentration of Calcium present in the milk powder by complexometric titration with EDTA
10. Determination of Calcium and Magnesium present in the Limestone or Dolomite Samples
11. Determination of Ammonia from ammonia containing fertilizer

SUGGESTED BOOKS:

1. F.J. Welcher-Standard methods of analysis,
2. A.I. Vogel-A text book of quantitative Inorganic analysis-ELBS,
3. H.H. Willard and H. Deal- Advanced quantitative analysis- Van Nostrand Co,
4. F.D. Snell & F.M. Biffen-Commercial methods of analysis-D.B. Taraporavala &sons,
5. G.Z. Weig - Analytical methods for pesticides, plant growth regulators and food additives - Vols I to VII,
6. Analytical Agricultural Chemistry by S.L. Chopra & J.S. Kanwar – Kalyani Publishers
7. F.J. Welcher-Standard methods of analysis,
8. Quantitative analysis of drugs in pharmaceutical formulations by P.D. Sethi, CBS Publishers and Distributors, New Delhi
9. G. Ingram- Methods of organic elemental micro analysis- Chapman and Hall.

SCHEME OF VALUATION

Max. Marks: 50

I.	Procedure to be written in the first 15 minutes	….	10 Marks
II.	Recording of data and reporting the value upto 2% error……		20 Marks
III.	Error up to 5%	…….	10 Marks
	Error greater than 5%	……	5 Marks
IV.	Viva – Voice	……..	10 Marks
V.	Record	……..	10 Marks

P. R. GOVERNMENT COLLEGE, KAKINADA
MODEL QUESTION PAPER
SEMESTER – VI
Paper - VII (ANALYTICAL CHEMISTRY-7)
ANALYSIS OF APPLIED INDUSTRIAL PRODUCTS
(EECTIVE)

Duration: 2hrs. 30Min. **Max. Marks: 60**

SECTION – A

Answer any **FOUR** questions. Each question carries **10** marks. 4 X 10 = 40M

1. Question from Unit –I
2. Question from Unit –II
3. Question from Unit –III
4. Question from Unit - IV
5. Question from Unit – V
6. Question from Unit – III
7. Question from Unit – IV
8. Question from Unit - V

SECTION – B

Answer any **four** questions. Each question carries **5** marks. 4 x 5 = 20M

9. Question from Unit - I
10. Question from Unit – II
11. Question from Unit – III
12. Question from Unit – IV
13. Question from Unit – V
14. Question from Unit – II
15. Question from Unit – III
16. Question from Unit - V

P. R. GOVERNMENT COLLEGE, KAKINADA
SEMESTER – VI
Paper - VII (ANALYTICAL CHEMISTRY-7)
ANALYSIS OF APPLIED INDUSTRIAL PRODUCTS
(EECTIVE)

Duration: 2hrs. 30Min. **Max. Marks: 60**

Blue Print:

S. No.	Course Content	Essay Questions (10M)	Short Answer Questions (5M)	Total No. Of Questions from each Unit
1	**Unit -I**	**1**	**1**	**2**
2	**Unit –II**	1	2	2
3	**Unit –III**	2	2	4
4	**Unit –IV**	2	1	4
5	**Unit -V**	**2**	**2**	**4**
	TOTAL	**8**	**8**	**16**

Note: Questions should be given from Question bank only

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SEMESTER – VI
Paper - VII (ANALYTICAL CHEMISTRY-7)
ANALYSIS OF APPLIED INDUSTRIAL PRODUCTS
(EECTIVE)

Duration: 2hrs. 30Min. Max. Marks: 60

Question Bank:

Essay Questions: 10 M

1. How do you analyze lead chromate and zinc chromate present in paints?

1. How do you determine the total fatty matter and free alkali of soaps?
2. Describe the analysis of benzene.
3. Explain about the analysis of Oils
4. Explain about the analysis of NPK fertilizers
5. Write about the analysis of DDT and BHC
6. Write about the analysis of starch, paper analysis.
7. Explain about the analysis of CO_2 and saturated hydrocarbons
8. Write about the analysis of water gas and producer gas
9. Write about the ultimate analysis of C and H
10. Write about the analysis of total silica and lime content in cement
11. Explain about the analysis of cement
12. Write about the analysis of silica and total alkalis in glasses.
13. Explain about the analysis of glass

Question Bank:

Essay Questions:05 M

1. Explain about the analysis of Sodium silicate in soaps
2. Explain about the analysis of BaSO4 in paints
3. Write about the analysis of Iodine value in oils
4. Explain about the analysis of acid value in oils
5. Explain about the determination of methoxyl group in industrial solvents
6. Explain about the determination of N-Methyl group in industrial solvents.
7. Write about the analysis of Urea
8. Explain about the analysis of Super phosphate
9. Write about the analysis of DDT
10. Explain about the analysis of endrin.
11. Write about the analysis of sugars
12. Explain about the analysis of paper
13. Explain about octane number
14. Write about cetane number
15. Write about the analysis of water gas.
16. Write about the analysis of sulphuric anhydride in cement
17. Explain about the analysis of ferric oxide content in cement
18. Explain about the determination of calcium in Glasses
19. Explain about the determination of magnesium in Glasses
20. Explain about the determination of Sulphur in Glasses
21. Write about the composition of cement
22. Write about the composition of glass