

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON (C.G.)

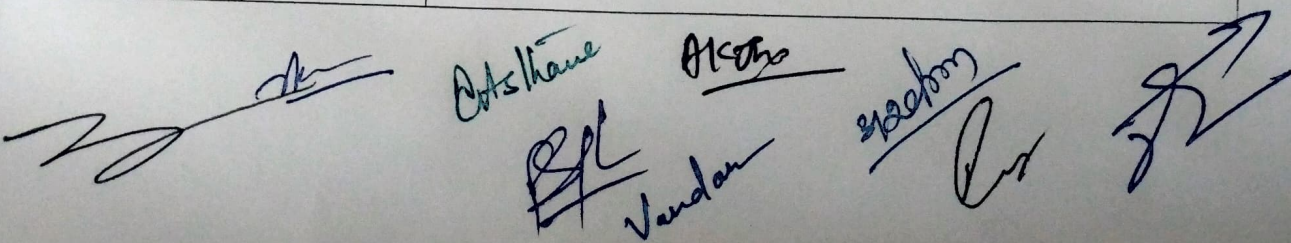
**FYUGP (CBCS/LOCF Course)**

Department: - CHEMISTRY

Session: 2025-26	Program: B.Sc.
Semester: VI	Subject: <b>INDUSTRIAL CHEMISTRY</b>
Course Type: DSC	Course Code: .....
Course Title:	<b>ORGANIC SYNTHESIS AND INDUSTRIAL INSTRUMENTATIONS</b>
Credit: 4 0 3	Lecture: 60
M.M. 100 = (ESE 80+IA 20)	Minimum Passing Marks: 40%

Title	ORGANIC SYNTHESIS AND INDUSTRIAL INSTRUMENTATIONS
Course Learning Outcome:	(i) Study about dimension of units in solid, liquid, gaseous mixture composition (ii) Student will learn about material physical process balancing with and without reactions (iii) Industrially waste water system plant working process (iv) Students know about standard dimesntion unit calculation procdure and surface chemistry and interfacial phenomena.

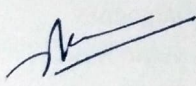
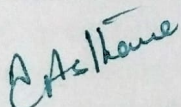
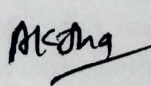
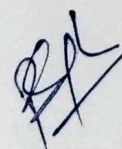
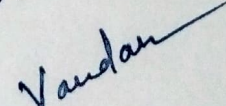
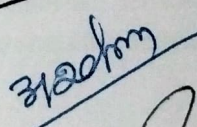
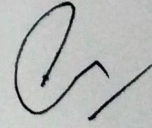
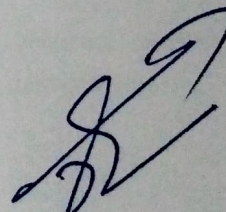
Units	Lectures	Lectures (15 x 4 = 60)
I	15	<b>1. Dimensions and units:</b> Basic chemical calculations- Atomic weight, molecular weight, equivalent weight, mole composition of (i) liquid mixture (ii) gaseous mixture. <b>2. Material balance involving chemical reaction:</b> concept of limiting reactant, conversion, yield liquid phase reaction, gas phase reactions with / without recycle or by-pass.
II	15	<b>Effluent treatment and waste management:</b> Principles and equipments for aerobic, anaerobic treatment adsorption, filtration, sedimentation.
III	15	<b>Chromatography:</b> Introduction, types, principle, industrial uses Paper chromatography, TLC, HPLC, GLC, Ion chromatograpy
IV	15	<b>Surface chemistry &amp; Interfacial Phenomena</b> <b>Gels:</b> Classifications, preparations, properties, Application


 The bottom of the page features several handwritten signatures in blue ink. From left to right, they appear to be: a signature starting with 'N', a signature starting with 'A', a signature starting with 'R', a signature starting with 'V', a signature starting with 'P', and a signature starting with 'S'.

		<b>Sols:</b> Properties, Stability <b>Micelles:</b> Types of micelles, structure, solubilization, uses <b>Aerosols:</b> Type, Classification, properties <b>Surfactants:</b> Types, Detergent effect, Hydrotropes <b>Adsorption:</b> Types, Adsorption Isotherm
--	--	---

#### LIST OF REFERENCE BOOK

- Catalysis, Homogeneous & heterogeneous Delmon, Elsevier Science Publication.
- Catalysis, Science & Technology, Anderson, J.
- Catalysis in Macromolecular systems, Fendler & Fendler.
- Phase Transfer Catalysis Principle & Techniques, Strles, C.
- Surface Chemistry, J.J. Bikermann, Academic Press.
- Physical Chemistry of surfaces by A. W. Admson.
- Stoichiometry, B.I. Bhatt & S.M. Vora.
- Chemical Process Principle – Part I., B.A. Hougen, K.M. Weston & R.A. Ragats, Asia Publication.
- Unit process in Organic synthesis P.M. Groggins, McGraw Hill.
- Effluent Treatment in process Industries - Inst. of Chem. Engg.
- Effluent Treatment and waste Disposal –Inst. of Chem. Engg.
- Effluent Treatments and Disposal –Inst. of Chem. Engg.
- Unit process in organic synthesis, P.M. Groggins, Mc Graw Hill.
- Industrial Instrumentation, Bekmen, D. P. John Wileys.
- Applied Instrumentation in process Industries, Vol. I, II & III Andrew, W. G. Gulf Publication.
- Instrumentation and Control for the process Industries, Borer, S.E. levier Applied Science Publishers.

Credit : 01

Practical lab

## ORGANIC SYNTHESIS AND INDUSTRIAL INSTRUMENTATIONS LAB

Duration of Examination: 04Hrs.

Max. Marks – 50

### UNIT PROCESS:

One to two examples of each of the following.  
Nitration, Sulphonation, Friedel-crafts reaction, Esterification, Hydrolysis, Oxidation, Halogenation, Chloro-Sulphonation, Reduction, Polymerisation, Reaction of diazonium salts.

### INSTRUMENTAL METHODS OF ANALYSIS:

Use of colorimeter, pH meter, Potentiometer, Conductometer, Refractometer, Polarimeter.

### MATERIAL TESTING :

Testing of alloys, Identification of plastics/rubber, estimation of yield point, Young's modulus, flaredness; Optical, Thermal, Mechanical and Electrical properties.

### PROCESS INSTRUMENTATION:

Transducers of different types, use of Transducers for measuring flow control. Determination of flash point and ignition points of liquids.

### WATER ANALYSIS:

Solid contents, hardness, COD and other tests as per industrial specifications.

### FLOW MEASURING DEVICES: Floats

Monographs of representative raw materials such as sulphuric acid, toluene, sodium carbonate, sodium hydroxide, carbon tetra chloride, benzoic acid (5-6 compounds).

Limit tests for heavy metals Pb, As, Hg, Fe and ash content.

### Scheme for the Examination

Major	15
Minor	10
Sessional	05
Viva	10
Internal	10
Total =	50

Arshi

AKONG

8/2/2020

Vanda