

	ΙB	. Tec	ch. – I		Semest						20CY	2001)						
Lectures	:				rs/Week								nt	:	30			
Final Exam	:	:3 Hours/WeekContinuous Assessment:30:3 HoursFinal Exam Marks:70									70							
Pre-Requisite	: None	е.																
Course Objec	Course Objectives: The student should be conversant:																	
v		With the principles of water characterization and treatment of water for industrial																
1.	purposes and methods of producing water for potable purposes.																	
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2.			ontrol.			2			1	0.		0						
2	W	ith t	the co	nven	tional	energ	y so	urces	s, so	lid, l	iquid	and	gase	ous Fi	uels &			
3.					cking a								0					
4	W	ith a	im to	gain	good kr	nowle	dge (of org	ganic	react	ions,	plastic	cs, co	nductir	ng			
4.	pc	lymo	ers & l	biode	gradabl	e poly	ymers	5.										
Course Outco	mes: S	Stud	ents w	ill be	able to)												
CO-1	D	evelo	op inno	ovativ	ve meth	ods t	o pro	duce	soft	water	for i	indust	rial u	se and	potable			
0-1	wa	ater a	at chea	per c	ost.		_								_			
CO-2	A	oply	their	know	ledge i	n co	nverti	ing v	ariou	s ene	rgies	of di	fferen	t syste	ems and			
0-2	nr																	
CO 2		protection of different metals from corrosion.Have the capacity of applying energy sources efficiently and economically for																
CO-3	Ĥ				various needs.													
CO-3	Ha va	riou	s needs	s.														
	Ha va De	riou: esigr	s needs	s. omica	ally and	new	meth	nods	of or	ganic	synth	esis a	nd su	bstitute	e metals			
CO-3 CO-4	Ha va Do wi	rious esign th c	s needs n econo onduct	s. omica ting p	ally and polymer	new	meth 1 also	nods	of or	ganic	synth	esis a	nd su	bstitute				
	Ha va Do wi	rious esign th c	s needs n econo onduct	s. omica ting p	ally and	new	meth 1 also	nods	of or	ganic	synth	esis a	nd su	bstitute	e metals			
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Thermodynamic functions: energy, entropy and free energy. Estimations of entropy and free energies. Free energy and emf. Cell potentials, the Nernst equation and applications.

 Corrosion: Types of corrosion - Chemical or dry corrosion, Electrochemical or wet corrosion; Galvanic, stress, pitting and differential aeration corrosion; Factors effecting corrosion, Corrosion control – Cathodic protection, and electro plating (Au) & electrodes Ni plating.

 UNIT-3 (12 Hours)

Fuels: Classification of fuels; Calorific value of fuels (lower, higher)

Solid fuels: Determination of calorific value (Bomb Calorimeter) & related problems, Coal ranking. **Liquid Fuels**: Petroleum refining and fractions, composition and uses. Knocking and anti- knocking Agents, Octane number and Cetane number; Bio fuels- Biodiesel, general methods of preparation and advantages

Gaseous fuels: CNG and LPG,

Flue gas analysis – Orsat apparatus.

UNIT-4

(12 Hours)

Organic reactions and synthesis of a drug molecule

Introduction to reactions involving substitution (SN^1, SN^2) , addition (Markownikoff's and anti-Markwnikoff's rules), elimination $(E_1\& E_2)$, Synthesis of a commonly used drug molecule.(Aspirin and Paracetamol)

Polymers: Conducting polymers: Classification, Intrinsic and Extrinsic conducting polymers and their applications. Plastics: Thermoplasts and thermosetting plastics, Bskelite and PVC.

Bio degradable polymers: types, examples-Polyhydroxybuterate (PHB), Polyhydroxybuterate-co- β -hydroxyvalerate (PHBV), applications.

Text Books :	1. P.C. Jain and Monica Jain, "Engineering Chemistry" DhanpatRai Pub,
	Co., New Delhi 17th edition (2017).
	2. SeshiChawla, "Engineering Chemistry" DhanpatRai Pub, Co LTD, New
	Delhi 13 th edition, 2013.
References :	1. Essential of Physical Chemistry by ArunBahl, B.S. Bahl, G.D.Tuli, by
	ArunBahl, B.S. Bahl, G.D.Tuli, Published by S Chand Publishers, 12th
	Edition, 2012.
	2. Engineering Chemistry by C.P. Murthy, C.V. Agarwal, A. Naidu B.S.
	Publications, Hyderabad (2006).
	3. Engineering Chemistry by K. Maheswaramma, Pearson publishers 2015.



ENGINEERING CHEMISTRY LAB Practicals : 3 Hours/Week Continuous Assessment : 30 Final Exam : 3 Hours/Week Continuous Assessment : 30 Pre-Requisite: None.				E	NGIN	EER	ING	CHE	MIST	RY	LAB]	
Practicals : 3 Hours/Week Continuous Assessment : 30 Final Exam : 3 Hours Final Exam Marks : 70 Pre-Requisite: None. : 70 Course Objectives: The course consists of experiments related to the principles of chemistry required for engineering student. The student should know: : 70 1. The basics of chemistry lab to carry out the qualitative and quantitative analysis of any given sample. . . . 2. Sait. To determine the percentage purity of washing soda bleaching powder and given salt. 3. The measurement of quality parameters of water to check its suitability for domestic and industrial purpose 4. To estimate the characteristic properties of oil for its use at various level 5. To synthesize the Soap, Resin and Aromatic Ester followed by their applications 6. Course Outcomes: Students will be able to 	I	B.Te	ech –									CYL01	1)					
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LIST OF EXPERIMENTS

1. Introduction to Chemistry Lab (the teachers are expected to teach fundamentals like Calibration of Volumetric Apparatus, Primary, Secondary Solutions, Normality, Molarity, Molality etc. and error, accuracy, precision, theory of indicators, use of volumetric titrations).

2. Volumetric Analysis:

a. Estimation of Washing Soda.

- b. Estimation of Active Chlorine Content in Bleaching Powder
- c. Estimation of Mohr's salt by permanganometry.
- b. Estimation of given salt by using Ion-exchange resin using Dowex-50.

3. Analysis of Water:



- a. Determination of Alkalinity of Tap water.
- b. Determination of Total Hardness of ground water sample by EDTA method
- c. Determination of Salinity of water sample.

4. Estimation of properties of oil:

- a. Estimation of Acid Value
- b. Estimation of Saponification value.

5. Preparations:

- a. Preparation of Soap
- b. Preparation of Urea-formaldehyde resin
- c. Preparation of Phenyl benzoate.

6. Demonstration Experiments (Any two of the following):

- a. Determination of p^H of given sample.
- b. Determination of conductivity of given sample by conductometer.
- c. Potentiometric Determination of Iron.

Text Books :	1. Practical Engineering Chemistry by K.Mukkanti, Etal, B.S. Publicaitons, Hyderabad, 2009.
	2. Inorganic quantitative analysis, Vogel, 5th edition, Longman group Ltd.
	London, 1979.
References :	1. Text Book of engineering chemistry by R.n. Goyal and HarrmendraGoel.
	2. A text book on experiments and calculations- Engineering Chemistry.
	S.S. Dara.
	3. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya
	Publications.