GOVERNMENT POLYTECHNIC JAGATSINGHPUR

LESSON PLAN OF 4 TH SEMESTER CHEMICAL ENGINEERING			
Discipline :- CHEMICAL	Semester: 4 th	Name of the Teaching Faculty SUBHASHREE PRIYADARSHINI	
Subject:- Organic Chemistry (TH 1)	No of Days per Week Allotted :- 04	SEMESTER: MARCH TO JUNE No of Weeks:- 15	
Week	Class Day	Theory/ Practical Topics	
	1 st	CHAPTER-1: IUPAC NOMENCLATURE	
1 st	and	Introduction to organic chemistry	
1	2 rd	Scope of organic chemistry	
	3 rd	Differentiate between organic compound and inorganic compounds	
	4 th	Importance of organic Chemistry in modern life.	
and	1 st	Classification of organic compounds	
2110	2 nd	Sources of organic compounds	
	3 rd	Functional groups	
	4 th	IUPAC rules	
_	1 st	IUPAC naming of mono functional Organic Compound	
	2 nd	IUPAC naming of poly functional Organic Compound.	
3 rd	3 rd	IUPAC naming practices of different structure names	
	4 th	Concepts of Isomerism and types with example of isomerism	
	1 st	CHAPTER-2: ALIPHATIC COMPOUNDS	
$4^{ ext{th}}$	2 nd	Methods of preparations of methane	
	3 rd	Properties and uses of ethane	
	4 th	Methods of preparations ethane	
	1 st	Application of methane and ethane	
5 th	2 nd	Concepts of Alkene	
	3 rd	Properties of ethylene.	
	4 th	Methods of preparations of ethylene	
6 th	1 st	Concepts of Alkyne	
	2 nd	Properties and uses of acetylene.	
	3 rd	Methods of preparation of acetylene.	
	4 th	Concepts of Alcohol and types	
7 th	1 st	Absolute alcohol and denatured alcohol	
	2^{nd}	Properties and uses of methanol.	
	3 rd	Methods of preparation of methanol.	
-	4 th	Properties and uses of ethanol.	
8 th	1 st	Methods of preparation of ethanol.	
	2^{nd}	Introduction to acids	
	3 rd	Properties and uses of formic acid.	
	4 th	Methods of preparation of formic acid.	

9 th	1 st	Properties and uses of acetic acid.		
	2 nd	Methods of preparation of acetic acid.		
	3 rd	Introduction to aldehyde		
	4 th	Properties and uses of formaldehyde.		
10 th	1 st	Methods of preparation of formaldehyde.		
	2 nd	Properties and uses of acetone.		
	3 rd	Methods of preparation of acetone		
	4 th	CHAPTER-3: AROMATIC COMPOUNDS		
		Introduction to aromatics		
11 th	1 st	Properties and uses of benzene		
	2 nd	Methods of preparation benzene		
	3 rd	Methods of preparation, properties and uses of toluene		
	4 th	Properties and uses of Benzene derivative compound phenol		
12 th	1 st	Methods of preparation of Benzene derivative compound phenol		
	2 nd	Properties and uses of Benzene derivative compound Benzaldehyde		
	3 rd	Methods of preparation of Benzene derivative compound		
	4 th	CHAPTER-4: CARBOHYDRATES, PROTEINS & FATS		
		Carbohydrates and its Classification		
13 th	1 st	Synthesis and inter conversions of monosaccharide		
	2 nd	Properties and uses of glucose, fructose		
	3 rd	Manufacturing of glucose, fructose		
	4 th	Properties and uses of sucrose, and starch		
14 th	1 st	Manufacturing of sucrose		
	2 nd	Preparation of amino acid		
	3 rd	Properties and uses of amino acid		
	4 th	Classification of proteins, Peptides		
15 th	1 st	Properties of proteins		
	2 nd	Uses of proteins		
	3 rd	Sources, of fats		
	4 th	Properties and uses of fats		

LESSON PLAN OF 4 TH SEMESTER CHEMICAL ENGINEERING			
		NAME OF THE TEACHING FACULTY	
CHEMICAL	Semester:-4 [™]	RAJESH KUMAR DUTTA	
SUBJECT: HEAT TRANSFER (TH 2)	No of days per Week Allotted : 04	SEMESTER: MARCH TO JUNE No of Weeks:- 15	
Week	Class/ Day	Theory/ Practical Topics	
	1 st	Heat flow concept in conduction	
1 ST	2 nd	Steady state and unsteady state heat flow	
1	3 rd	State Fourier's law of conduction	
	4 th	Heat flow through single	
	1 st	Heat flow through composite walls	
2 ND	2 nd	Heat flow through cylinder	
2	3 rd	Heat flow through spheres	
	4 th	Heat flow in single and series medium	
	1 st	Thermal insulation	
	2 nd	critical radius of insulation	
	3 rd	Solve simple numerical problems on	
3 rd		conduction	
	4 th	Solve simple numerical problems on	
		conduction	
	1 st	Solve simple numerical problems on	
		conduction	
	2 nd	Concept of heat flow by convection	
4 th	3 rd	Free Convection	
	4 th	Forced Convection	
	1 st	Individual and overall heat transfer co efficient	
	2 nd	Application of dimensional analysis in Convention	
5 th	3 rd	Use of Empirical equations for different	
	4 th	Parallels, co current and counter current	
	1 st	Log mean temperature difference	
		Problems on Convection	
6 th	2 2 rd	Problems on Convection	
	<u> </u>	Classify heat exchanger	
	1 st	Construction and working of shell and tube	
		heat exchanger	
	2 nd	Multi pass and single pass heat exchanger	
7 th	3 rd	Derive energy balance for shell and tube	
, ,		heat exchanger	
	4 th	Construction and operation of Finned tube	
		heat exchanger	
	1 st	Construction and operation of Plate type	
8 th	_	heat exchanger	

	2 nd	Construction and operation of Scrapped
	-	surface heat exchanger
	3 rd	Heat transfer in agitated vessel
	4 th	Problems on Heat Exchangers
	1 st	Problems on Heat Exchangers
	2 nd	Define condensation
9 th		Drop wise and film type condensation
	4 th	Principle in radiation heat transfe
	1 st	Concept of black body
	2 nd	Emissivity
10 th	2 rd	Grav Body
	<u> </u>	Mono chromatic emissive nower
	1 st	Derivation of total emissive power
	2 nd	Kirchhoff's Law
11 th	2 2 rd	Stofan Boltzmann's Law
		Wiegla law
	4 *	Plant's law
	2nd	Plank S law
12 th	2 rd	Estimate heat transfer by radiation
	3 ⁻³	Estimate heat transfer by radiation
	4 th	Estimate heat transfer by radiation
	1 st	Objective of Evaporation
	2"	Performance, capacity, economy of
1 oth	ard	evaporator
13	3	Differentiate among various types of
	ath	
	4	Construction and operation of standard
a aTH	4 St	basket evaporator
14	1	Construction and operation of long tube
	and	Flavourte requirements of a state
	Z	Elementary principle of single and
	brd	Material and anomaly holonos of single
	5	Material and energy balance of single
	th	Deiling point alovation
1 c TH	4 1 st	Veneue recommendation
12	1	vapour recompression, mechanical
	D nd	Solve simple problems on evenerators
	2 rd	Solve simple problems on evaporators
	3'''	Solve simple problems on evaporators
	4 ^m	Solve simple problems on evaporators

LESSON PLAN OF 4 TH SEMESTER CHEMICAL ENGINEERING		
		NAME OF THE TEACHING FACULTY
CHEMICAL	Semester:-4 [™]	PRATEEK KUMAR DAS
SUBJECT: MASS TRANSFER- I (TH 3)	No of days per Week Allotted : 04	SEMESTER: MARCH TO JUNE No of Weeks:- 15
Week	Class/ Day	Theory/ Practical Topics
	1 st	Importance of mass transfer operations
151	2 nd	General principle of mass transfer operations
10.	3 rd	Classify mass transfer operations
	4 th	Molecular diffusion and inter phase diffusion
	1 st	Diffusion in gases and liquids
2 ND	2 nd	Explain Fick's law
2	3 rd	Explain mass transfer coefficient
	4 th	Solve problems on diffusion
	1 st	Solve problems on diffusion
	2 nd	Types of boiling point diagrams and
	3 rd	Vanour- liquid equilibrium
3 rd	5 4 th	Relative volatility and derive an expression
		between $\propto \& x-y$
	1 st	Draw XY data (equilibrium curve) for different system in graph paper
	2 nd	Simple distillation & Derivation of Rayleigh's equation
4 th	3 rd	Simple distillation & Derivation of
		Solve problems on Payleigh's equation
	4 1 st	Solve problems on Rayleigh's equation
	2 nd	Flash distillation and material balance in
ςth		flash distillation
5	3 rd	Continuous rectification of binary system
	4 th	Continuous rectification of binary system
	1 st	Construction of rectification column
6 th	2 nd	Construction of rectification column
	3 rd	Types of trays & re-boiler
	4 th	Types of trays & re-boiler
	1 st	Channeling, weeping, entrainment and flooding
7 th	2 nd	Analyze fractionating column by McCabe and Thiele Method and find out feed plate location (solve simple problems)
,	3 rd	Analyze fractionating column by McCabe and Thiele Method and find out feed plate location (solve simple problems)
	4 th	Analyze fractionating column by McCabe

		and Thiele Method and find out feed plate
		location (solve simple problems)
	1 st	Analyze fractionating column by McCabe
		and Thiele Method and find out feed plate
		location (solve simple problems)
8 th	2 ^{na}	Reflux ratio and concept of minimum,
6	ard	D C timum and total reflux ratio
	3.**	Reflux ratio and concept of minimum,
	ath	optimum and total reflux ratio
	4 ^{ct}	Plate efficiency, Murphree's efficiency
	1 st	Steam distillation and its application
9 th	2 nd	Azeotropic Distillation
	3 rd	Extractive Distillation
	4 th	Solve problems on distillation
	1 st	Solve problems on distillation
10 th	2 nd	Solve problems on distillation
10	3 rd	Principle of absorption
	4 th	Factors affecting rates of absorption
	1 st	Different equipment used for absorption
	2 nd	Different equipment used for absorption
11 th	3 rd	Types of packing materials used in
		absorption
	4 th	Regular and Random packing
	1 st	Loading, flooding and its effect on
		pressure drop
12 th	2 nd	Minimum gas-liquid ratio
	3 rd	НЕТР
	4 th	HTU & NTU
	1 st	Elementary ideas about spray tower
	2 nd	Elementary ideas about wetted wall
13 th		column
	3 rd	Solve simple problems on Absorption
	4 th	Solve simple problems on Absorption
14 TH	1 st	Principle of adsorption
	2 nd	Types of adsorption
	3 rd	Factors affecting adsorption
	4 th	Different types of adsorbents
15 TH	1 st	Nature of adsorbents
	2 nd	Flutriation percolation
	2rd	Industrial application of adsorption
		Construction and operation of Industrial
	4	adsorption equipment

GOVERNMENT POLYTECHNIC JAGATSINGHPUR

Discipline :- CHEMICAL PROCESS INDUSTRIESSemester:-4%Name of the Teaching Faculty Dr. SUSHANTA KUMAR BEHERASubject:- CHEMICAL PROCESS INDUSTRIESNo of Days per Week Allotted :- 04SEMESTER: MARCH TO JUNE No of Weeks: 15WeekClass DayTheory/Practical TopicsWeekClass DayTheory/Practical Topics142 nd Concept of unit operation & unit operation3 nd General principles applied in studying an industries, types of flow sheet4 nd Economics in Chemical process and selection of optimization process2 nd Concepts of batch and continuous process2 nd ChaPTER-2: INDUSTRIAL GASES2 nd Manufacturing process of Hydrogen from propane with a flow sheet.4 nd Properties, application and manufacturing of producer gas3 nd Manufacturing of process of Hydrogen from propane with a flow sheet.4 nd Properties, application and manufacturing of valer gas3 nd Properties, application and manufacturing of producer gas3 nd Properties, application and manufacturing of aver gas3 nd Properties, application and manufacturing of carbon dioxide4 nd Properties, application and manufacturing of propers4 nd Properties, application of subhuric acid by contact (DCDA) process4 nd Properties, application of Nitric acid4 nd Properties, application of Subhuric acid by contact (DCDA) process4 nd Properties, application of Subhuric acid by contact (DCDA) process4 nd Properties, application of solds ash </th <th colspan="4">LESSON PLAN OF 4TH SEMESTER CHEMICAL ENGINEERING</th>	LESSON PLAN OF 4 TH SEMESTER CHEMICAL ENGINEERING			
Subject:- CHEMICAL PROCESS INDUSTRIES No of Days per Week Alloited :- 04 SEMESTER: MARCH TO JUNE No of Weeks: - 15 -1 (TH 4) No of Weeks: - 15 Week Class Day Theory/ Practical Topics Week Class Day Theory/ Practical Topics 1 st 2 ^{sd} Concept of unit operation & unit operation 1 st 2 ^{sd} Concept of unit operation & unit operation 2 ^{sd} General principles applied in studying an industries, types of flow sheet 4 th Economics in Chemical process and selection of optimization process 2 ^{sd} 2 ^{sd} Chapter 2: INDUSTRIAL GASES Discussion on Hydrogen, industrial uses and its properties Discussion on Hydrogen from propane with a flow sheet. 4 th Properties, application and manufacturing of roducer gas 3 rd Manufacturing or carbon dioxide 4 th Properties, application and manufacturing of Properties and application and manufacturing of Acetylene 4 th Properties, application on disuldistrial uses 3 rd Properties, application of Nitric acid by contact (DCDA) process 4 th Properties, application of Nitric acid by contact (DCDA) process 4 th Prope	Discipline :- CHEMICAL	Semester:-4 th	Name of the Teaching Faculty Dr. SUSHANTA KUMAR BEHERA	
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4 th Properties, application of Nitric acid5 th 1 st Manufacture of Nitric acid by Ammonia Oxidation or Ostwald's process.5 th 2 nd CHAPTER-4: CHLORO–ALKALI INDUSTRY Introduction of chloro–alkali industry3 rd Properties, application of soda ash4 th Manufacture of soda ash by Solvay's process6 th 1 st 2 nd Manufacture of caustic soda6 th 1 st 2 nd Manufacture of caustic soda by electrolysis of brine3 rd Different types of electrolytic cells with their advantages & disadvantages7 th 1 st 7 th 1 st 2 nd Manufacture of pulp by sulphate process3 rd Manufacture of pulp by sulphate process		3 rd	Manufacture of sulphuric acid by contact (DCDA) process	
5 th 2 nd CHAPTER-4: CHLORO-ALKALI INDUSTRY Introduction of chloro-alkali industry 3 rd Properties, application of soda ash 4 th Manufacture of soda ash by Solvay's process 6 th 1 st 2 nd Manufacture of caustic soda 6 th 1 st 2 nd Manufacture of caustic soda 6 th 1 st 2 nd Manufacture of caustic soda 3 rd Different types of electrolytic cells with their advantages & disadvantages 4 th Major engineering problem to chloro-alkali industries 7 th 1 st CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 2 nd Manufacture of pulp by sulphate process 3 rd Manufacture of pulp by sulphate process 3 rd		4 th	Properties, application of Nitric acid	
5 nd 2 nd CHAPTER-4: CHLORO-ALKALTINDUSTRY Introduction of chloro-alkali industry 3 rd Properties, application of soda ash 4 th Manufacture of soda ash by Solvay's process 6 th 1 st Properties, application of caustic soda 2 nd Manufacture of caustic soda by electrolysis of brine 3 rd Different types of electrolytic cells with their advantages & disadvantages 4 th Major engineering problem to chloro-alkali industries 7 th 1 st CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 2 nd Manufacture of pulp by sulphate process 3 rd Manufacture of pulp by sulphite process	⊂ th	1 st	Manufacture of Nitric acid by Ammonia Oxidation or Ostwald's process.	
3^{rd} Properties, application of soda ash 4^{th} Manufacture of soda ash by Solvay's process 6^{th} 1^{st} Properties, application of caustic soda 2^{nd} Manufacture of caustic soda by electrolysis of brine 3^{rd} Different types of electrolytic cells with their advantages & disadvantages 4^{th} Major engineering problem to chloro–alkali industries 7^{th} 1^{st} CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 2^{nd} Manufacture of pulp by sulphate process 3^{rd} Manufacture of pulp by sulphate process	3	2 nd	CHAPIER-4: CHLORO-ALKALI INDUSIRY	
3 rd Properties, application of soda ash 4 th Manufacture of soda ash by Solvay's process 6 th 1 st Properties, application of caustic soda 2 nd Manufacture of caustic soda by electrolysis of brine 3 rd Different types of electrolytic cells with their advantages & disadvantages 4 th Major engineering problem to chloro–alkali industries 7 th 1 st CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 1 2 nd Manufacture of pulp by sulphate process 3 rd Manufacture of pulp by sulphite process		2 rd	Introduction of chloro-alkall industry	
6th 1st Properties, application of caustic soda 2nd Manufacture of caustic soda by electrolysis of brine 3rd Different types of electrolytic cells with their advantages & disadvantages 4th Major engineering problem to chloro–alkali industries 7th 1st CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 1troduction to pulp by sulphate process 3rd Manufacture of pulp by sulphate process		J ¹	Manufacture of sode ash by Solvey's process	
2nd Manufacture of caustic soda by electrolysis of brine 3rd Different types of electrolytic cells with their advantages & disadvantages 4th Major engineering problem to chloro–alkali industries 7th 1 st CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 1 2nd Manufacture of pulp by sulphate process 3rd Manufacture of pulp by sulphite process	6 th	1 st	Properties, application of caustic soda	
3 rd Different types of electrolytic cells with their advantages & disadvantages 4 th Major engineering problem to chloro–alkali industries 7 th 1 st CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 2 nd Manufacture of pulp by sulphate process 3 rd Manufacture of pulp by sulphite process		2 nd	Manufacture of caustic soda by electrolysis of brine	
4 th Major engineering problem to chloro–alkali industries 7 th 1 st CHAPTER-5: PULP & PAPER INDUSTRY Introduction to pulp and paper 2 nd 3 rd Manufacture of pulp by sulphate process			Different types of electrolytic cells with their advantages & disadvantages	
7 th 1 st CHAPTER-5: PULP & PAPER INDUSTRY 1 st CHAPTER-5: PULP & PAPER INDUSTRY 1 st Introduction to pulp and paper 2 nd Manufacture of pulp by sulphate process 3 rd Manufacture of pulp by sulphite process		4 th	Major engineering problem to chloro–alkali industries	
Introduction to pulp and paper 2 nd 3 rd Manufacture of pulp by sulphate process	7 th	1 st	CHAPTER-5: PULP & PAPER INDUSTRY	
2nd Manufacture of pulp by sulphate process 3rd Manufacture of pulp by sulphite process	, ,	· ·	Introduction to pulp and paper	
3^{rd} Manufacture of pulp by sulphite process		2 nd	Manufacture of pulp by sulphate process	
		3 rd	Manufacture of pulp by sulphite process	

	4 th	Manufacture of paper by wet process
8 th	8 th 1 st Recovery of chemicals from black liquor, by product utiliz	
	2 nd	Different type of paper products.
	3 rd	Additives used in paper production and their application.
	4 th	Differentiate between sulphate & sulphite process
9 th	1 st	CHAPTER-6: CEMENT INDUSTRIES
		Introduction to cement industries
	2 nd	Different types of cement
	3 rd	Constituents of cement and their characteristics, lime stone beneficiation
	4 th	Manufacture of Portland cement by wet process
10 th	1 st	Manufacture of Portland cement by dry process
	2 nd	Additives used in cement industries
	3 rd	Factors affecting cement industry
	4 th	Major application of cement and Importance of mini cement plant.
11 th	1 st	CHAPTER-7: METALLURGICAL INDUSTRIES
		Introduction to metallurgical industries
	2 nd	Methods of manufacturing cast iron
	3 rd	Properties of cast iron
	4 th	Manufacture of sponge iron, wrought iron
12 th	1 st	Different methods of steel manufacturing
	2 nd	Manufacture of alumina from bauxite by Bayer's process
	3 rd	Extraction of aluminium from alumina by Hope's process
4 th		Manufacture of rare earth elements like thorium, &uranium and their
		application.
13 th	1 st	Manufacture of rare earth elements like titanium, Zirconium and their
		application.
	2 nd	CHAPTER-8: FERTILIZERS
		Introduction to fertilizers industries
	3 rd	Classification of fertilizers
	4 th	Properties, application of urea.
14 th	1 st	Manufacture of urea
	2 nd	Properties and application of calcium ammonium nitrate.
	3 rd	Manufacture of calcium ammonium nitrate
	4 th	Properties and application of super phosphate and ammonium phosphate,
15 th	1 st	Manufacture of super phosphate and ammonium phosphate,
	2 nd	Properties and application of nitro phosphate, sodium phosphate
	3 rd	Manufacture of nitro phosphate
	4 th	Manufacture of sodium phosphate