CHEMICAL ENGINEERING DEPARTMENT LESSON PLAN (2023-24)

Discipline :- **CHEMICAL**	Semester:-**5th**	Name of the Teaching Faculty **Satya Sankar Raj**
Subject:- **Entrepreneurship And Management & Smart Technology**	No of Days/per Week Class **Allotted :-04**	Semester From: -01 August 2023 To: -30 November 2023
Course Code : **TH 1**		
Week	**Class Day**	**Theory/ Practical Topics**
1st	1st	**Chapter 1: Entrepreneurship** Concept /Meaning of Entrepreneurship
	2nd	Need of Entrepreneurship
	3rd	Characteristics, Qualities and Types of entrepreneur,
	4th	Entrepreneur's vs. Manager
2nd	1st	Forms of Business Ownership: Sole proprietorship, partnership forms and others
	2nd	Types of Industries, Concept of Start-ups
	3rd	Entrepreneurial support agencies at National, State, District Level(Sources): DIC, NSIC,OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc.
	4th	Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks
3rd	1st	Functions and Barriers in entrepreneurship
	2nd	**Chapter 2: Market Survey and Opportunity Identification (Business Planning)** Business Planning
	3rd	SSI, Ancillary Units, Tiny Units, Service sector Units
	4th	Time schedule Plan, Agencies to be contacted for Project Implementation
4th	1st	Assessment of Demand and supply and Potential areas of Growth
	2nd	Identifying Business Opportunity
	3rd	Final Product selection
	4th	**Chapter 3: Project report Preparation** Preliminary project report
5th	1st	Detailed project report,
	2nd	Techno economic Feasibility
	3rd	Project Viability
	4th	**Chapter 4: Management Principles** Definitions of management
6th	1st	Principles of management

	2nd	Functions of management (planning, organising, staffing, directing and controlling etc.)
	3rd	Level of Management in an Organisation
	4th	**Chapter 5: Functional Areas of Management** Production management: Functions, Activities
7th	1st	Productivity Quality control Production Planning and control
	2nd	Inventory Management
	3rd	Need for Inventory management
	4th	Models/Techniques of Inventory management
8th	1st	Financial Management
	2nd	Functions of Financial management
	3rd	Management of Working capital, Costing (only concept)
	4th	Break even Analysis
9th	1st	Brief idea about Accounting Terminologies: Book Keeping, Journal entry
	2nd	Marketing Management, Concept of Marketing and Marketing Management
	3rd	Marketing Techniques, Concept of 4P s (Price, Place, Product, Promotion)
	4th	Human Resource Management
10th	1st	Functions of Personnel Management
	2nd	Manpower Planning, Recruitment, Sources of manpower,
	3rd	Selection process, Method of Testing, Methods of Training & Development, Payment of Wages
	4th	**Chapter 6: Leadership and Motivation** Definition and Need/Importance
11th	1st	Qualities and functions of a leader, Manager Vs Leader
	2nd	Style of Leadership (Autocratic, Democratic, Participative)
	3rd	Definition and characteristics of motivation, Importance of motivation
	4th	Factors affecting motivation, Theories of motivation (Maslow)
12th	1st	Methods of Improving Motivation
	2nd	Importance of Communication in Business
	3rd	Types and Barriers of Communication
	4th	**Chapter 7: Work Culture, TQM & Safety** Human relationship and Performance in Organization
13th	1st	Relations with Peers, Superiors and Subordinates
	2nd	TQM concepts: Quality Policy, Quality Management, Quality system
	3rd	Accidents and Safety, Cause, preventive measures,
	4th	General Safety Rules , Personal Protection Equipment(PPE)
14th	1st	**Chapter 8: Legislation** **Introduction**
	2nd	Intellectual Property Rights(IPR), Patents, Trademarks, Copyrights
	3rd	Features of Factories Act 1948 with Amendment (only salient points)

	4th	Features of Payment of Wages Act 1936 (only salient points
15th	1st	**Chapter 9: Smart Technology** Concept of IOT, How IOT works
	2nd	Components of IOT, Characteristics of IOT,
	3rd	Categories of IOT
	4th	Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare, Smart Industry, Smart Agriculture, Smart Energy Management etc

LESSON PLAN OF 5th SEMESTER(2023-24) CHEMICAL ENGINEERING DEPARTMENT		
Discipline: Chemical	**Semester: 5th**	**Name of the Teaching Faculty: Yayati Kishore Mohanta**
Subject: Theory-2 **Mass Transfer -2**	**No of Days per week class allotted:4**	Semester From: -01 August 2023 To: -30 November 2023
Week	**Class days**	**Theory/ Practical Topic**
1st	1st	**Chapter – 1: Humidification and Dehumidification** Introduction about humidification and dehumidification
	2nd	Define temperature, wet bulb temperature and dry bulb temperature
	3rd	The principle of wet blub temperature theory
	4th	Illustrate humidity chart
2nd	1st	Different methods of measurement of Humidity
	2nd	Practice to identify different lines, temperatures, humidity in humidity chart
	3rd	Different methods of humidification
	4th	Different methods of dehumidification
3rd	1st	The construction and working of natural cooling tower
	2nd	The construction and working of mechanical draft cooling tower
	3rd	Solve simple problems
	4th	Revision of the chapter
4th	1st	Doubt clearing and practicing class
	2nd	**Chapter – 2: Drying** Introduction to drying
	3rd	Types of Moisture content-equilibrium, unbound, free moisture
	4th	Showing different types of moisture content in the graph
5th	1st	Concept of drying rate with graphical view
	2nd	Practicing numerical
	3rd	The methods of removing liquids from solids
	4th	Illustrate constant rate and falling rate period
6th	1st	The construction and working principle of tray dryer
	2nd	The construction and working principle of rotary dryer, spray dryer
	3rd	The construction and working principle of tunnel dryer, flash dryer
	4th	The construction and working principle of dryer fluidized bed dryer

7th	1st	Dryer for heat sensitive materials
	2nd	Solve simple problem
	3rd	Solve simple problem
	4th	Revision of the chapter
8th	1st	Practicing previous year questions
	2nd	**Chapter – 3: Extraction** Introduction to extraction
	3rd	Liquid extraction and leaching
	4th	Different types of extraction
9th	1st	Learning concentration on the triangular diagram
	2nd	The principle of solid liquid extraction
	3rd	Revision of the chapter
	4th	Define Batch leaching with example
10th	1st	Continuous leaching operation
	2nd	Construction and working of Solid-Liquid extraction equipment
	3rd	Construction and working of Solid-Liquid extraction equipment
	4th	The principal of liquid-liquid extraction
11th	1st	The parameter in choice of solvent for liquid-liquid extraction
	2nd	Revision and doubt clearing class about the chapter
	3rd	Practice questions based on the chapter
	4th	Construction and working principle of liquid-liquid extraction equipment
12th	1st	Construction and working principle of solid liquid extraction equipment
	2nd	Solve simple problems
	3rd	Solve simple problems
	4th	**Chapter – 4: Crystallization** Introduction to crystallization
13th	1st	Principle of crystallization
	2nd	Construction and working of different types of batch crystallizer
	3rd	Construction and working of different types of continuous crystallizer
	4th	Solve simple problems
14th	1st	Solve simple problems
	2nd	Practice previous years question related to the chapter
	3rd	Revision of the chapter-1

	4th	Revision of the chapter-2
15th	1st	Revision of the chapter-3
	2nd	Revision of the chapter-4
	3rd	Practice previous year questions
	4th	Practice previous years questions

UCPES BERHAMPUR

CHEMICAL ENGINEERING DEPARTMENT
LESSON PLAN(2023-24)

Discipline :- **CHEMICAL**	Semester:-**5th**	Name of the Teaching Faculty: Sibasish Mahapatra
Subject:- **Chemical Process Industries – II** Course Code : **TH 3**	No of Days/per Week Class **Allotted :-04**	Semester From: -01 August 2023 To: -30 November 2023
Week	**Class Day**	**Theory/ Practical Topics**
1st	1st	**CHAPTER-1: PESTICIDES** Introduction
	2nd	Pesticides, Classification
	3rd	Manufacture of DDT
	4th	DDT flow sheet description & application
2nd	1st	**CHAPTER-2: PAINTS AND VARNISHES** Introduction about paint, varnishes, lacquers, enamels and their components
	2nd	Constituents of paints and their characteristics
	3rd	Manufacturing process of paints and varnishes.
	4th	Failure of paints
3rd	1st	Advance technologies in paint industries
	2nd	**CHAPTER-3: EXPLOSIVES** Introduction about explosives
	3rd	Classification of different explosives
	4th	Manufacture of cellulose nitrate
4th	1st	Broad application of cellulose nitrate
	2nd	Manufacture nitroglycerine and dynamite
	3rd	**CHAPTER-4: PLASTICS** Introduction about plastics, types
	4th	Differentiate between thermoplastic and thermosetting
5th	1st	Classification of plastics
	2nd	Properties and manufacture of phenol formaldehyde and its application
	3rd	Properties and manufacture of urea formaldehyde and its application
	4th	Properties and Manufacture of polyethylene and its application
6th	1st	Properties and Manufacture of P.V.C and its application
	2nd	**CHAPTER-5: SYNTHETIC FIBERS** Introduction about fibre and its classification
	3rd	Properties of polyamides
	4th	Manufacture of Nylon and its application
7th	1st	Properties and Manufacture of Viscose rayon and its application
	2nd	Properties and Manufacture of Cupro ammonium rayon and its application

	3rd	Properties and Manufacture of Acetate rayon and its application
	4th	Properties and Manufacture of Polyester and its application
8th	1st	**CHAPTER-6: RUBBER** Introduction about rubber and its classification
	2nd	Vulcanization of rubber
	3rd	Natural and synthetic rubber
	4th	Manufacture of SBR and their properties
9th	1st	Manufacture of Nitrile rubber and their properties
	2nd	**CHAPTER-7: SUGAR** **Introduction**
	3rd	Manufacture of sugar from sugarcane
	4th	Manufacture of industrial alcohol and uses
10th	1st	Classification of alcoholic beverages
	2nd	Properties of Alcohols
	3rd	Manufacture of Beer
	4th	Cont..
11th	1st	**CHAPTER-8: OILS AND FATS** Classify different types of oil
	2nd	Manufacture of vegetable oil
	3rd	Differentiate edible and essential oil
	4th	Differentiate oil and fats
12th	1st	Hydrogenation of oil and application
	2nd	Advance technologies in oil production
	3rd	**CHAPTER-9: SOAPS AND DETERGENTS** Introduction on soaps and detergent
	4th	Differentiate between soap and detergent
13th	1st	Properties of surfactant
	2nd	Cleaning action of soap
	3rd	Types of soap
	4th	Manufacture of soap and uses
14th	1st	Manufacture of detergent and uses
	2nd	Industrial application of surfactants
	3rd	**CHAPTER-10: PHARMACEUTICAL INDUSTRY** Classification of pharmaceutical industry
	4th	Major pharmaceutical industry in India
15th	1st	Pharmaceutical industry products
	2nd	Properties and structure of penicillin
	3rd	Manufacture of penicillin by fermentation
	4th	Application of penicillin

LESSON PLAN OF 5TH SEMESTER(2023-24) CHEMICAL ENGINEERING		
DISCIPLINE: CHEMICAL	**Semester:-5TH**	**NAME OF THE TEACHING FACULTY** **Siddhibinayak Pradhan**
SUBJECT: CHEMICAL ENGINEERING THERMODYNAMICS	**No of days per Week Allotted : 04**	Semester From: -01 August 2023 To: -30 November 2023
Week	**Class/ Day**	**Theory/ Practical Topics**
1ST	1st	Scope and limitations of Thermodynamics
	2nd	System, surrounding and boundary
	3rd	Different types of systems
	4th	Processes, state, properties
2ND	1st	Path and State functions
	2nd	Heat and Work
	3rd	Equilibrium state and phases
	4th	Zeroth law of Thermodynamics
3rd	1st	State and explain first law of Thermodynamics
	2nd	State and explain first law of Thermodynamics
	3rd	Concept of internal energy, Enthalpy, heat capacity
	4th	Concept of internal energy, Enthalpy, heat capacity
4th	1st	First law of thermodynamics for cyclic process, non-flow process, and flow process
	2nd	First law of thermodynamics for cyclic process, non-flow process, and flow process
	3rd	First law of thermodynamics for cyclic process, non-flow process, and flow process
	4th	Solve numerical on application of 1ST lawof thermodynamics
5th	1st	Solve numerical on application of 1ST lawof thermodynamics
	2nd	Constant volume process for ideal gases
	3rd	Constant pressure process for ideal gases
	4th	Constant temperature process for ideal gases
6th	1st	Adiabatic process for ideal gases
	2nd	Polytrophic process for ideal gases
	3rd	Solve simple problems
	4th	Solve simple problems
7th	1st	Solve simple problems

	2nd	Equation of state and ideal gas
	3rd	P-V-T behavior of pure fluid
	4th	P-V-T behavior of pure fluid
8th	1st	Concept of heat reservoir, heat engine, andheat pump
	2nd	Concept of heat reservoir, heat engine, andheat pump
	3rd	State and explain second law of thermodynamics
	4th	Concept of entropy
9th	1st	Concept of entropy
	2nd	Calculate change of entropy for various conditions
	3rd	Calculate change of entropy for various conditions
	4th	Calculate change of entropy for various conditions
10th	1st	Third law of Thermodynamics
	2nd	Solve simple problems
	3rd	Solve simple problems
	4th	Classify thermodynamic properties
11th	1st	Work function and Gibb's free energ
	2nd	Work function and Gibb's free energ
	3rd	Gibb's phase rule
	4th	Various relationships among thermodynamic properties
12th	1st	Maxwell equation
	2nd	Maxwell equation
	3rd	Clapeyron equation
	4th	Entropy-heat capacity relation
13th	1st	Differential equation for entropy
	2nd	Effect of temperature, pressure and volume on U,H and S, relationship between Cp andCv
	3rd	Effect of temperature, pressure and volume on U,H and S, relationship between Cp andCv
	4th	Gibb's-Helmholtz equation
14TH	1st	Fugacity co-efficient, effect of temperatureand pressure on fugacity, fugacity of pure gases, solids and liquids
	2nd	Fugacity co-efficient, effect of temperatureand pressure on fugacity, fugacity of pure gases, solids and liquids
	3rd	Concept of activity, Effect of pressure and temperature on activity
	4th	Concept of activity, Effect of pressure and temperature on activity

15TH	1st	Concept of Refrigeration and liquefaction process
	2nd	Previous Year Questions discussion
	3rd	Previous Year Questions discussion
	4th	Objective Questions discussion

Discipline: Chemical		Semester: 5th	Name of Faculty: Sibasish Mahapatra	
Subject: Theory-5 Instrumentation & Chemical Analysis		No of Days per week class allotted	Semester From: -01 August 2023 To: -30 November 2023	
Week	Class No	Class days	Chapter	Theory Topic
			Chapter -1 Instrument	
1st	1	1st	1.1	Introduction to instrumentation, Measurement, and its aim
	2	2nd	1.2	Standards of measurements- International standard, basic standards
	3	3rd	1.3	Functional elements of an instrument
	4	4th	1.4	Performance characteristics of an instrument
2nd	5	1st	1.5	Errors in instrumentation, Sources, Units of measurement
			Chapter -2Measurement of Characteristics	
	6	2nd	2.1	Viscosity measurement, Principle, capillary viscometer, Effux Cup viscometer
	7	3rd	2.1	Redwood viscometer, falling sphere viscometer, Continuous viscometer
	8	4th	2.2	Nature of radiant energy, Electromagnetic spectrum
3rd	9	1st	2.2	Phenomena related with energy: Absorption & Emission, Fluorescence
	10	2nd	2.2	Type of Spectroscopy-Microwave, Ultraviolet and visible spectroscopy
	11	3rd	2.2	Fundamental laws and working of a spectrometer, Colorimeter, applications
	12	4th	2.3	Optical activity & polarimetry, Specific and molecular rotation
4th	13	1st	2.3	Working of polarimeter and application of polarimeter
	14	2nd	2.4	Concept of refractometry, Snell's law, principle of refractometer
	15	3rd	2.4	Measurement of refractive index by refractometer, application in Industry
			Chapter -3pH and Conductivity Measurement	
	16	4th	3.1	pH measurement working principle
5th	17	1st	3.1	Construction of pH electrodes and its operation
	18	2nd	3.1	Operation of pH meter, advantages, disadvantages, and applications
	19	3rd	3.2	Principles of measurement of electrical conductivity
	20	4th	3.2	Operation of Conductivity meter, advantages, disadvantages, and applications
6th			**Chapter -4Temperature Measurement**	
	21	1st	4.1	Different temperature scales and its interconversions
	22	2nd	4.1	Basic fixed points, secondary fixed points
	23	3rd	4.2	Methods of temperature measurement- principle and applications
	24	4th	4.3	Measurements of temperature in liquid in glass thermometer
Week	Class No	Class days	Chapter	Theory Topic
7th	25	1st	4.4	Working of resistance thermometer, advantages, and disadvantages

	26	2nd	4.4	Thermocouples, material used in thermocouples and its advantages
	27	3rd	4.4	Working of radiation pyrometer, advantages, disadvantages, and application
	28	4th	4.4	Working of Optical pyrometer, advantages, disadvantages, and application
8th	29	1st	4.4	Fiber optics temperature measurement and ultrasonic thermometers
	30	2nd	4.4	Calibration of thermometers, miscellaneous measurement techniques
			Chapter -5Pressure Measurement	
	31	3rd	5.1	Different types of pressures, units, and interconversions
	32	4th	5.2	Methods of pressure measurements
9th	33	1st	5.3	Elastic Pressure transducers, components in Bourdon tube Pressure Gauge
	34	2nd	5.3	Adjustments in Bourdon tube Pressure Gauge, advantages, disadvantages
	35	3rd	5.3	Diaphragm pressure transducers, advantages, disadvantages, and application
	36	4th	5.3	Bellows type gauge advantages, disadvantages, and application
10th	37	1st	5.3	Measurement of vacuum-Capsule gauge, McLeod gauge-applications
	38	2nd	5.3	Calibration of pressure measuring instrumentations
	39	3rd	5.4	Maintenance of pressure measuring instruments-Inspection, care, and repair
	40	4th	5.4	Troubleshooting of pressure measuring instruments.
			Chapter -6Automatic Control	
11th	41	1st	6.1	Automatic control system and explain the application with example.
	42	2nd	6.1	Working of a heat exchanger Control system
	43	3rd	6.1	Working of a liquid level tank Control system
	44	4th	6.2	Elementary idea on transfer functions for a first order system & time constant
12th	45	1st	6.2	Block diagram and components of Process Control system
	46	2nd	6.2	Function of sensors and transmitters, transfer function of a control system
	47	3rd	6.2	Working of sensor transmitter combination
	48	4th	6.3	Types of process control system, advantages, and disadvantages
13th	49	1st	6.3	Working of open loop control system with examples
	50	2nd	6.3	Working of Closed loop control system with examples
	51	3rd	6.3	Working of Feed Forward control system with examples
	52	4th	6.3	Working of cascade control system with examples
14th	53	1st	6.4	Elementary idea about different types of automatic controllers.
	54	2nd	6.4	Ratio control system, analog and digital control system
	55	3rd	6.5	Application based control system- sequential control system, Numerical CS
	56	4th	6.5	I,D,PI, PD,PID Pneumatic, Hydraulic and electronic controller
Week	Class No	Class days	Chapter	Theory Topic
15th	57	1st	6.5	Principle of PLC, computer Aided measurement and control

	58	2nd	6.5	PLC Architecture, PLC basic structure and programming
	59	3rd	6.5	Role of computers in measurement and control
	60	4th	6.5	Elements of computer aided measurement and control, architecture

Discipline: Chemical		Semester: 5th	Name of Faculty: All faculty	
Subject: Student Centric Activity		No of Days per week class allotted-03	Semester From: -01 August 2023 To: -30 November 2023	
Week	Class No	Class days		
1st	1	1st	September 4th Week	Orientation Program and Mentor Mentee Meet
	2	2nd		
	3	3rd		
2nd	4	1st	October 2nd week	Poster Making on Emerging trends in different Chemical Industry/Energy Conservation/
	5	2nd		
	6	3rd		
3rd	7	1st	October 3rd week	Seminar by Industry Expert- latest trend in Plastic Processing- ProprietorSree Plast Limited or Functioning of State Pollution Control Board- RO Regional Office OSPCB
	8	2nd		
	9	3rd		
4th	10	1st	October 4th week	Laboratory Maintenance- 1.Cleaning of equipment,2. Lubrication 3. Running of equipment 4.Removal of residue material 5.Pianting of parts, 6.Arranging glass ware, Chemicals 7. Minor maintenance of equipment
	11	2nd		
	12	3rd		
5th	13	1st	November 1st week	Creativity & Idea Presentation-
	14	2nd		
	15	3rd		
6th	16	1st	November 2nd week	Seminar by Industry Expert- Pharmaceutical Intermediate Processing-Dept of Pharmacy BU/ Roland Institute of pharmacy
	17	2nd		
	18	3rd		
7th	19	1st	November 4th week	Field Visit or Industry visit- JK paper/ Waste Treatment plant Mahuda/SreePlast limited
	20	2nd		
	21	3rd		
8th	22	1st	December 1st week	CV/ Interview preparation/Career Counseling Program
	23	2nd		
	24	3rd		
9th	25	1st	December 2nd week	Laboratory Maintenance-1.Cleaning of equipment,2. Lubrication 3. Running of equipment 4.Removal of residue material 5.Pianting of parts, 6.Arranging glass ware, Chemicals 7. Minor maintenance of equipment
	26	2nd		
	27	3rd		
10th	28-30	1st - 3rd	December 3rd week	Seminar by Industry Expert- From IISER/ CoE BU in the latest area ofresearch

LESSON PLAN OF CHEMICAL ENGINEERING
DEPARTMENT WINTER 2023

Discipline: Chemical	Semester: 5th	Name of Faculty: Siddhibinayak Pradhan
Subject: Practical-1 Instrumentation Laboratory	No of periods per week allotted:6	Semester From: -01 August 2023 To: -30 November 2023
Week	Experiment	Experiment Topic
1st	1	Separation of Iron using solvent extraction technique
2nd	2	Determine pH and conductivity of a given solution by pH-meter
3rd	2	Determine pH and conductivity of a given solution by pH-meter
4th	3	Determine the concentration of sugar in sugar solution by Polarimeter
5th	3	Determine the concentration of sugar in sugar solution by Polarimeter
6th	4	Determine the refractive index of different liquids by Abbe's Refractometer
7th	4	Determine the refractive index of different liquids by Abbe's Refractometer
8th	5	To determine Maximum wavelength of a solution of cobalt chloride
9th	5	Verify Beer's Law and apply it to find the concentration of the given unknown solution by Spectrophotometer
10th	6	To verify Beer's law of solution of KMnO4 and K2Cr2O7 using calorimeter
11th	7	Demonstrate different types of pressure gauges and temperature measuring device
12th	8	Determine the viscosity of an Oil by Red Wood Viscometer at different temperature and plotting a graph between viscosity and temperature
13th	8	Determine the viscosity of an Oil by Red Wood Viscometer at different temperature and plotting a graph between viscosity and temperature
14th	9	Calibration of a thermocouple
15th	10	Demonstrate function of digital multi-meter

LESSON PLAN OF 5TH SEMESTER (2023-24) CHEMICAL ENGINEERING DEPARTMENT		
Discipline: Chemical	**Semester: 3rd**	**Name of The Teaching Faculty: Yayati Kishore Mohanta**
Subject: Practical-3 Mass Transfer 2 Laboratory	**No of Days per week class allotted:3**	Semester From: -01 August 2023 To: -30 November 2023
Week	**Practical days**	**Practical Topic**
1st	1st	A. Demonstraton of operation of a Cooling Tower B. Determination of humidity, humid volume, humid heat, percentage of humidity by psychometric method.
	2nd	
	3rd	
2nd	1st	A) Demonstration of operation of the wetted wall column B) Determination of Psychometric parameter of outlet air
	2nd	
	3rd	
3rd	1st	A) Demonstrate operation of a tray dryer (Vacuum / Atmospheric type) B) Plot the rate of drying curve for a given sample of wet solid
	2nd	
	3rd	
4th	1st	Demonstrate operation of a Fluidized bed dryer
	2nd	
	3rd	
5th	1st	A) Demonstrate operation of an open pan crystallizer B) Find the yield of crystal from a given solution
	2nd	
	3rd	
6th	1st	Mid Term Viva
	2nd	
	3rd	
7th	1st	Demonstrate operation of Swanson Walker Crystallizer
	2nd	
	3rd	
8th	1st	MID TERM VIVA
	2nd	
	3rd	

9th	1st	Separate a solution into its component by using liquid liquid extraction metho
	2nd	
	3rd	
10th	1st	Demonstrate operation of a solid-liquid extractor
	2nd	
	3rd	
11th	1st	Demonstrate operation of spray tower
	2nd	
	3rd	
12th	1st	To determine the partition coefficient of Iodine between water and carbon tetrachlorid
	2nd	
	3rd	
13th	1st	Demonstrate operation of liquid-liquid extractor
	2nd	
	3rd	
14th	1st	END TERM VIVA
	2nd	
	3rd	
15th	1st	RECORD SUBMISSION AND VIVA BY EXTERNAL
	2nd	
	3rd	