RGPV (DIPLOMA WING) BHOPAL

OBE CURRICULUM FOR THE COURSE

FORMAT - 3

Sheet No.

Branch

CHEMICAL

Semester

5

Course Code

Course Name

SEPARATION PROCESSES I

Course	The students will be able to identify principles of	Teach	Marks
Outcome 1	mass transfer.	Hrs	
Learning	Student will be able to understand separation processes	4	10
Outcome 1			
Contents	Overview of chemical engineering separation process, Mechanism of separation: mechanical separations and mass transfer operations, Classification of Mass Transfer Operation, steady state operation ,unsteady state operation, stagewise operations, continuous contact (differential contact) operation, Direct contact of two immiscible phases Gas-gas, Gas-liquid, Gas-solid, Liquid- liquid, Liquid- solid and Solid- solid, Phase separated by membrane		
Method of Assessment	Pen paper test		
	Student will be able to select appropriate mass transfer	4	10
Learning	Student will be able to select appropriate mass transfer	4	10
Outcome 2	operation for a particular mixture		
Contents	Choice of separation method, introduction to distillation absorption, humidification, drying, crystallization, leaching, extraction, and adsorption with driving force, mixtures for which they are suitable and areas of applications.		
Method of	Pen paper test		
Assesment			
Course	The students will be able to apply principles of		
Outcome 2	diffusion.		
Learning	Student will be able to explain basics of diffusion	4	10
Outcome 1			
Contents	 Introduction, Difference between diffusion and effusion, understanding diffusion through kinetic theory of gases, Mean free path, impact of pressure and temperature on rate of diffusion, Molecular and turbulent diffusion, Types of molecular diffusion, Difference between molecular and turbulent diffusion, Rate of diffusion, Diffusion of substance due to bulk and relative motion, Fick's law of diffusion, 		

	Diffusivity		
Method of	Theory exam		
Assessment			
Learning	Student will be able to calculate rate of diffusion in different	8	15
Outcome 2	phases under steady state conditions.		
Contents	Steady state molecular diffusion in fluids (gases and liquids) at rest and in laminar flow. Molecular diffusion in gases for equimolal counter diffusion, and for diffusion of a component in a non diffusing substance. Molecular diffusion in liquid for equimolal counter diffusion and diffusion of a component in a non diffusing substance. Steady state molecular diffusion in multi component mixture, effective mean diffusivity, simple numerical problems,		
Method of	Theory Exam		
Assessment			
Learning Outcome 3	The students will be able to calculate diffusivity of gases and liquids.		
Contents	Calculation of diffusivity of gases and liquids applying fundamental principles and equipments based on them	9	20
Method of	Laboratory Test by observation		
Assessment			
Course Outcome 3	Student will be able to apply principles of distillation for the separation of binary liquid mixtures.		
Learning Outcome 1	Student will be able to explain laws related to distillation.	4	10
Contents	1 Definition, driving force and underlying principles of distillation. Binary and multi component distillation. More volatile and less volatile component, volatility and relative volatility. Dalton's and Roult's law with reference to distillation. Concept of partial pressure, vapor pressure & total pressure		
Method of Assessment	Paper Pen Test		
Learning Outcome 2	Student will be able to plot T-X-Y diagram and X-Y diagrams.	9	20
Contents	Phase equilibrium in distillation (practical determination of X-Y data), Vapor-liquid equilibrium diagram, boiling point composition diagram.Azeotrope,		
Method of	Laboratory Test by observation.		
Assessment			10
Learning	Student will be able to calculate Distillation characteristics of	4	10

Outcome 3	volatile components.		
Contents	volatility and relative volatility . Calculation of equilibrium data from relative volatility and from vapor pressure data of pure components, Simple numerical problems on above topics		
Method of	Theory Exam		
Assessment Learning	Students will be able to use different methods of distillation	15	25
Outcome 4	according to need.		
Contents	 Methods of distillation : Differntial distillation, equilibrium distillation, steam distillation, azeotropic distillation, extractive distillation, and rectification. Differential distillation: Principle, Equipments and its operation fields of application, Rayleigh equation, Use of graphical integration for calculation based on Rayleigh equation Equilibrium distillation: Principle, Equipments and its operation fields of application, Calculation of residue and distillate composition, Difference between differential distillation & equilibrium distillation Steam distillation : Use of open steam in distillation Reason advantage, disadvantages, application and calculation of steam requirement. Azeotropic distillation : azeotproic mixture and and difficulty in its separation, principle, and Description of the method by suitable examples minimum and maximum boiling azeotrope. Extractive distillation: need to carry out extractive distillation Continuous Rectification: Principle of continuous distillation, Distillation column used for used for continuous rectification. Distillate and waste, Reboiler and condenser, Partial and total condensation. Down comer and weir, Use of multiple feed and side streams 		
Method of Assessment	Theory exam		
Learning Outcome 5	Students will be able to operate different types of distillation apparatus.	15	20
Contents	operation of batch distillation, sieve tray ,bubble cap tray column, vapour liquid equilibrium apparatus and glass distillation column to generate data, and to calculate different parameters		
Method of	Laboratory Test by observation.		
Assessment Course Outcome 4	Student will be able to calculate reflux ratio , number of plates, water and steam requirements for the column		
Learning Outcome 1	Student will be able to number of plates, water and steam requirements for the column	11	25
Contents	Overall and component balance, Reflux and reflux ratio, Importance of reflux in purity of product,		

	alculation of No. of plates: Introduction to Mc Cabe Thiele Method, Lewis Sorrel Method, and Ponchon Sevrit method, Assumption inMcCabe and Lewis sorrel method: Assumptions of No heat losses, No heat of mixing and dilution, equimolal latent heat of vaporization and Equimolal counter diffusion, rectifying and stripping section and reason to naming so, nomenclature in rectifying and stripping section, Top and bottom operating line and their equations. Intersection of operating lines of rectifying and stripping sections. Equation of q line, slope of q line for various types of feed. Location of feed plate, Calculation of number of plates in rectifying and stripping section of the column and location of feed plate Mc Cabe Thiele method for different feed conditions, and calculation of water and steam requirement		
Method of Assessment	Theory exam		
Learning Outcome 2	The students will be able select appropriate reflux ration for a particular operation.	8	20
Contents	 Minimum reflux ratio : oearation of column at minimum reflux ratio, calculation of minimum reflux ratio by graphical method and Underwood and Fenske equation. Total reflux: Definition, what happens when the column is operated at total reflux, Calculation of no of plates at total reflux by Fenske equation Optimum reflux ratio: Factor affecting the selection of optimum reflux ratio, graphical selection of optimum reflux ratio. 		
Method of Assessment	Theory exam		
Learning Outcome 3	Student will be able to explain importance of optimum parameter selection for the smooth running of column.	5	10
Contents	Construction, merits and demerits of sieve tray, bubble cap tray and valve tray and their comparision. Problem encountered in the operation of tray columns: Entrainment, weeping, conning, dumping, priming, loading and flooding. Efficiency of distillation column: overall efficiency, Murphree plate efficiency and point efficiency.		
Method of	Theory Exam		
Assessment Course	Student will be able to control operation of absorption in packed		
Outcome 5	and plate towers.		
Learning	Student will be able to correlate different types of mass transfer coefficients.	6	10
Outcome 1			

Contents	 Definition and driving force for absorption, Equilibrium solubility of a gas in a liquid and concept of highly soluble, moderately soluble and almost insoluble gas. Henry's law, Solubility curve and operating line, Mass transfer coefficients : definition and explanation, Concept of gas film, liquid film and overall mass transfer coefficient & their interrelations. nomenclature of different types of mass transfer coefficients based on driving force. Choice of solvent for absorption 		
Method of Assessment	Theory Exam		
Learning Outcome 2	Student will be able to explain construction and working of equipments for absorption.	6	15
Contents	Packed tower for absorption: Detailed study of construction and working of packed tower. Characteristics of tower packing. types of tower packing : random and regular packing. their characteristics merits and demerits. Different types of random packings : construction, and figure. Channelling in packed tower and methods to minimise it. Construction, working and main feature of venturi scrubber and wetted wall column.		
Method of Assessment	Theory Exam		
Learning Outcome 3	Student will be able to operate absorption equipments.	12	20
Contents	Operation of wetted wall column and packed bed absorption column and generation of data.		
Method of Assessment	Laboratory test by observation		
Learning Outcome 4	Student will be able to calculate height of packed tower required for desired separation.	6	15
Contents	Height of column for isothermal non reaction absorption, derivation of Equation for calculation of tower height based on HTU and NTU, Minimum liquid gas ratio, different types of NTU, HTU based on different driving force. absorption factor, HETP,Simple numerical problems		
Method of Assessment	Theory Exam		

	CESSES I be able to identify pr e to understand sepa	inciples of m	C nass trans	0	2			1	1	-	
e students will b	be able to identify pr	inciples of m	ass trans								
		inciples of m	nass trans								
ident will be abl	e to understand sepa			fer.							
	1	aration proce	sses								
	S	SCHEME OF									
ntent	Teaching – Learning Method		ption of T Process	-L	Teach Hrs.		Pract. 'ut Hrs.	LRs	Require	ed	Remarks
s, Mechanism of anical separations operations, lass Transfer state operation peration, stagewise nuous contact act) operation, two immiscible as-liquid, Gas-solid, uid- solid and Solid-	Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.			3		book h		k hando	outs	
	SCH	EME OF ASS	SESSMEN	Г				·			
sessment	Description of Assess	sment	Maximun Marks	L	Re	source	s Requi	ired			xternal / Internal
learne	ed content will be asked		10		Test	Paper -	+ Rating	g Scale			Internal
ADD	ITIONAL INSTRUC	TIONS FOR 7	гне нор	/ FAC	U LTY (IF	ANY)					
		Nil									
	nical engineering ss, Mechanism of anical separations operations, Mass Transfer v state operation peration, stagewise nuous contact act) operation, two immiscible Gas-liquid, Gas-solid, uid- solid and Solid- rated by membrane Sessment Theo learned test p	ItentLearning Methodnical engineering as, Mechanism of anical separations r operations, Aass Transfer v state operation peration, stagewise huous contact act) operation, two immiscible bas-liquid, Gas-solid, uid- solid and Solid- rated by membraneTraditional Lecture MethodSCHSessmentDescription of Assess test paper	Itent Learning Method I nical engineering as, Mechanism of anical separations operations, Mass Transfer vistate operation peration, stagewise nuous contact act) operation, two immiscible ias-liquid, Gas-solid, uid- solid and Solid- rated by membrane Traditional Lecture Method Faculty will of content. To identify s assignment vi accordingly if tutorials will subject to the learned content will be asked in the test paper Sessment Description of Assessment I Theory question related to the learned content will be asked in the test paper Theory for the second of the second o	Itent Learning Method Process nical engineering as, Mechanism of anical separations operations, Aass Transfer v state operation peration, stagewise huous contact act) operation, two immiscible ias-liquid, Gas-solid, uid- solid and Solid- rated by membrane Traditional Lecture Method Faculty will explain lear content. To identify students were assignment will be given accordingly remedial and tutorials will be taken. SCHEME OF ASSESSMENT SCHEME OF ASSESSMENT Bessment Description of Assessment Maximum Marks Theory question related to the learned content will be asked in the test paper 10 ADDITIONAL INSTRUCTIONS FOR THE HOD	Itent Learning Method Process nical engineering is, Mechanism of anical separations operations, Aass Transfer y state operation peration, stagewise nuous contact act) operation, two immiscible iaas-liquid, Gas-solid, uid- solid and Solid- rated by membrane Traditional Lecture Method Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken. v state operation, peration, stagewise nuous contact act) operation, two immiscible iaas-liquid, Gas-solid, uid- solid and Solid- rated by membrane SCHEME OF ASSESSMENT Sessment Description of Assessment Maximum Marks Theory question related to the learned content will be asked in the test paper 10 ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACU	IntentLearning MethodProcessHrs.nical engineering is, Mechanism of anical separations operation, stagewise hoous contact oct) operation, two immiscible iaa-liquid, Gas-solid, uid- solid and Solid- rated by membraneTraditional Lecture MethodFaculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.3SCHEME OF ASSESSMENTSCHEME OF ASSESSMENTMaximum MarksResessmentDescription of AssessmentMaximum MarksReTheory question related to the learned content will be asked in the test paper10TestADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF	IntentLearning MethodProcessHrs./Tincal engineering is, Mechanism of anical separations operation, stagewise nous contact citcl operation, stagewise nous contact dido peration, stagewise nous contact dido peration, stagewise nous contact etcl operation, stagewise nous contact dido peration dido didoTraditional Lecture Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.Hrs./TSCHEME OF ASSESSMENTSCHEME OF ASSESSMENTsessmentDescription of AssessmentMaximum MarksResourceTheory question related to the learned content will be asked in the test paper10Test Paper -ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)	IntentLearning MethodProcessHrs./Tut Hrs.hical engineering s, Mechanism of anical separations operation, kass Transfer rostate operation peration, stagewise huous contact tact) operation, two immiscible iaa-sliquid, Gas-solid, uid- solid and Solid- rated by membraneTraditional Lecture MethodFaculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.31State operation, peration, stagewise huous contact act) operation, two immiscible iaa-sliquid, Gas-solid, uid- solid and Solid- rated by membraneSCHEME OF ASSESSMENTSSessmentDescription of AssessmentMaximum MarksResources Requi MarksTheory question related to the learned content will be asked in the test paper10Test Paper + RatingADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)	IntentLearning MethodProcessHrs./Tut Hrs.LKshical engineering is, Mechanism of anical separations operation, kass Transfer r state operation peration, stagewise huous contact action operation, kass TransferTraditional Lecture MethodFaculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.31Sug. bool pow hool powstate operation peration, stagewise huous contact act) operation, two immiscible ias-liquid, Gas-solid, uid- solid and Solid- rated by membraneDescription of AssessmentMaximum MarksResources RequiredsessmentDescription of AssessmentMaximum MarksResources RequiredTheory question related to the learned content will be asked in the test paper10Test Paper + Rating ScaleADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)	IntentLearning MethodProcessHrs./Tut Hrs.Lks kequirebical engineering is, Mechanism of anical separations, 	Intent Learning Method Process Hrs. /Tut Hrs. Lks Required inclal engineering is, Mechanism of anical separations operation, soperation, stagewise uous contact tect) operation, peration, stagewise uous contact tect) operation, beeration, stagewise uous contact tect) operation, beeration, stagewise uous contact tect) operation, text operation, beeration, stagewise uous scatact tect) operation, text operation of Assessment Maximum Marks New of apper + Rating Scale E I I Matter 10 Test Paper + Rating Scale I I

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Bra	nch Co	de	Cou	ırse C	Code	CO Code	LO Code	Format No. 4
		С	0	2				1	2	

COURS	E NAME	SEPARATION PR	OCESSES I						
CO Des	scription	The students wi	ll be able to identify pr	inciples of	f mass transfer.				
LO Des	scription	Student will be	able to select appropria	ite mass tr	ansfer operation for	or a particul	lar mixture.		
			S	CHEME (DF STUDY				
S. No.	Learnii	ng Content	Teaching –Learning Method	De	scription of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	introduction absorption, h crystallizatior extraction, a driving force	separation method, to distillation numidification, drying, n, leaching , and adsorption with c, mixtures for which hitable and areas of	Method	content. To identif assignmen according	ill explain learning y students weakness nt will be given and ly remedial and vill be taken.	3	1	Suggested text book handouts power point	
			SCH	EME OF A	SSESSMENT				
S. No.	Method	of Assessment	Description of Assess	ment	Maximum Marks	Reso	ources Requi	red	External / Internal
1	Paper Pen Te	st	Theory question related to learned content will be a the test paper		10	Test Pa	per + Rating S	Scale	Internal
			ADDITIONAL INSTRU	CTIONS F	OR THE HOD/ FAC	ULTY (IF A	NY)		
				N	il				

RG	PV (Diplom	PV (Diploma Wing) Bhopal SCHEME FOR LEARNING OUTCOME Branch Code Course Code Code Code Code C 0 2 2 1						LO Code	Format No. 4			
					C	0	2			2	1	
COURS	E NAME	SEPARATION PR	OCESSES I				_		I			
CO Des	scription	The students wi	ll be able to apply princ	ciples of diff	usion.							
LO Des	cription	Student will be	able to explain basics of	of diffusion								
		-	-	CHEME OF	STUDY							
S. No.	Learni	ng Content	Teaching –Learning Method		ription of 7 Process			'each Hrs.	Pract. /Tut Hrs	s. LRs	Require	ed Remarks
1	diffusion and understand kinetic theo Mean free pressure and of diffusion turbulent of molecular d between mod diffusion, Diffusion of s	diffusion, Types of		Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.				4	1	text han	gested boo douts ver point	
	1		SCH	EME OF ASS	SESSMEN	T						
S. No.	Method	of Assessment	Description of Assess	ment	Maximun Marks	1		Reso	urces Req	uired		External / Internal
	Theory Exam	1	Theory questions related learned content will be a the university question p	sked in	10			Qu	lestion pap	er		External
		'	ADDITIONAL INSTRU	CTIONS FOR	THE HO	D/ FA	CULTY	(IF A	NY)			
				Nil								

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Br	anch Co	ode	Co	ourse	Code	CO Code	LO Code	Format No. 4
		С	0	2				2	2	

OURS.	E NAME	SEPARA	TION PROCESSES I							
CO Des	scription	The stud	ents will be able to	apply principles	s of diffu	sion.				
LO Des	scription	Student wi	ll be able to calculate rat	e of diffusion in diff	erent phase	s under steady state co	onditions			
				SCHE	ME OF S	ΓUDY				
S. No.	Learnii	g ContentTeaching – Learning MethodDescription of T-L ProcessTeach Hrs.Pract. /Tut Hrs.LRs Requiredecular diffusion in fluids (gases and ecular diffusion in fluids (gases and TraditionalTraditionalFaculty will explain62Suggested								Remarks
1	liquids) at r diffusion in diffusion, a non diffusir liquid for ee diffusion of substance. Steady sta	est and in lan gases for eq nd for diffusion g substance. quimolal cour a componen te molecula mixture, effe	ninar flow. Molecular uimolal counter on of a component in a Molecular diffusion in nter diffusion and t in a non diffusing ar diffusion in multi ctive mean diffusivity,	Traditional Lecture Method	learning To identi weakness be given	content. fy students s assignment will and accordingly and tutorials will	6	Suggested text book handouts power point		
	· · ·			SCHEME	OF ASSE	SSMENT		1		
S. No.	Method Assessme	-	Description of A	Assessment		Maximum Marks		Resources	Required	External / Internal
	Theory exam	n	Theory question (in problem) related to be asked in the test	the learned conter		15		question pa	per	External
		I	ADDITION	AL INSTRUCTIO	ONS FOR	THE HOD/ FACU	JLTY (IF	ANY)		
					Nil					

RG	GPV (Diplom	a Wing) Bhopal	SCHEME FOR L OUTCOM		Br	anch C	ode	Cou	rse Code	CO Code	LO Code	Format No. 4
					С	0	2			2	3	
COURS	E NAME	SEPARATION P	ROCESSES I					-		1		I
CO Des	scription	The students w	ill be able to apply princ	ciples of di	ffusion.							
LO Des	scription	The students will be	e able to calculate diffusivity of	of gases and li	quids.							
			S	SCHEME O	F STUDY							
S. No.	Learni	ng Content	Teaching –Learning Method	Des	cription of Process	T-L		Гeach Hrs.	Pract. /Tut Hrs	LRs	Requir	ed Remarks
1	and liquids	of diffusivity of gases applying fundamenta nd equipments based		Faculty wil in lab and c take readin	lemonstrate				9	Setu	eriment ip Manua	
			SCH	EME OF AS	SSESSME	NT						
S. No.	Method	of Assessment	Description of Assess	sment	Maximu Marks			Reso	ources Requ	uired		External / Internal
	Laboratory T	Cest by observation	Examiner will ask to stud take reading and then cal in front of him and will a correctness of result	lculate	20]	Rating Scale	2		External
			ADDITIONAL INSTRU	JCTIONS F	OR THE H	IOD/ FA	ACUL	ГY (IF	ANY)			
				Nil								

RO	GPV (Diplom	a Wing) Bhopal	SCHEME FOR L OUTCO		Br	anch Co	ode	Cou	rse Code	CO Code	LO Code	Format No. 4
					C	0	2			3	1	
COURS	E NAME	SEPARATION	PROCESSES I						I			
CO De	scription	Student will be ab	le to apply principles of distilla	ation for the sep	paration of t	inary liq	uid mix	tures.				
LO Des	scription	. Student will be a	ble to explain laws related to d	istillation								
			ç	SCHEME OF	F STUDY							
S. No.	Learni	ng Content	Teaching –Learning Method	Desc	cription of Process	T-L		Feach Hrs.	Pract. /Tut Hrs	. LRs	Require	ed Remarks
1	Definition, driving force and underlying principles of distillation Binary and multi component distillation. More volatile and less volatile component, volatility and relative volatility . Dalton's and Roult's law with reference to distillation. Concept of partial pressure, vapor pressure & total pressure			Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.				3	1	text han	gested boo douts ver point	
			SCH	IEME OF AS	SESSME	NT						
S. No.	Method	of Assessment	Description of Assess	sment	Maximu Marks	n		Reso	ources Requ	ired		External / Internal
	Paper Pen Te		Theory question related to t learned content will be asked test paper					Test Dener + Deting Seels				Internal
			ADDITIONAL INSTRU	UCTIONS FO	OR THE H	OD/ FA	ACULT	ΓY (IF	ANY)		i	
				Nil								

RG	PV (Diploma	Wing) Bhopal	SCHEME FOR OUTCO		Bra	Branch Code			rse Code	CO Code	LO Code	Format No. 4
					С	0	2			3	2	
COURS	E NAME	SEPARATION	PROCESSES -I		I		1			1		
CO Des	cription	Student will be a	able to apply principles of distil	llation for the sep	paration of b	inary liq	uid mixt	ures.				
LO Des	cription	Student will be	able to plot T-X-Y diagram and	d X-Y diagrams								
				SCHEME OF	STUDY							
S. No.	Learnir	ng Content	Teaching –Learning Method	Desc	ription of Process	T-L		'each Hrs.	Pract. /Tut Hrs	s. LRs	Require	d Remarks
1	(practical de data), Vap	brium in distilla etermination of or-liquid equilibr ing point composi otrope,	X-Y ium tion	Faculty will of in lab and de take reading	monstrate l	now to		0	9	Setu	oeriment 1p Manual	
			SC	HEME OF AS	SESSMEN	T						
S. No.	Method o	of Assessment	Description of Asse	ssment	Maximur Marks	n		Reso	ources Requ	uired		External / Internal
	Laboratory T observation	est by	Students will be asked to reading and then calculate result. The correctness of re be assessed	the	20			ŀ	Rating Scale	2		Internal
			ADDITIONAL INSTR	RUCTIONS FO	OR THE H	OD/ FA	CULT	Y (IF	ANY)		i	
				Nil								

RG	GPV (Diplom	a Wing) Bhopal	SCHEME FOR L OUTCOM		Bra				Course Code		LO Code	Format No. 4
					С	0	2			3	3	
OURS	E NAME	SEPARATION PR	OCESSES I									
CO Des	scription	Student will be able	to apply principles of distilla	tion for the se	paration of b	inary liq	uid mixt	ures.				
LO Des	scription	Student will be able	to calculate Distillation chara	acteristics of v	olatile comp	onents.						
			S	CHEME O	F STUDY							
S. No.	Learni	ng Content	Teaching –Learning Method	Des	cription of Process	T-L		'each Hrs.	Pract /Tut H		s Require	ed Remarks
	 volatility and relative volatility . Calculation of equilibrium data fror relative volatility and from vapor pressure data of pure components, Simple numerical problems on abor topics 			Faculty will content. To identify assignment accordingly tutorials wi	students we will be give remedial a ll be taken.	eakness en and nd		3		tex hai	ggested t boo ndouts werpoint	ok
			SCH	EME OF AS								
S. No.	Method	of Assessment	Description of Assess	ment	Maximu Marks	n		Reso	urces Ree	luired		External / Internal
	Theory Exan	n	Theory questions related learned content will be a the university question p	sked in	10			Qu	estion pa	per		External
	1		ADDITIONAL INSTRU	UCTIONS FO	OR THE H	OD/ FA	CULT	Y (IF	ANY)		I	
				Nil								

a Wing) Bhopal						Course Code		CO Code	LO Code	Format No. 4
			C	0	2			3	4	
SEPARATION PRO	DCESSES - I		I				I			
		istillation for the sep	paration of b	inary liqu	uid mix	tures.				
Students will be able	to use different metho	ds of distillation acc	ording to ne	ed.						
		SCHEME OF	STUDY							
ng Content		Teaching – Learning Method	-		Г-L	Teach Hrs.		LRs	Requir	ed Remark
distillation, steam distillation extractive distillation, and stillation: Principle, Equip elds of application, Rayle egration for calculation b stillation: Principle, Equi s of application, Calcula osition, Difference betwo quilibrium distillation cion : Use of open steam tage, disadvantages, app ation of steam requireme stillation : azeotproic mixt separation, principle, and by suitable examples r num boiling azeotrope. illation: need to carry out tion,principle and Descrip table examples tween azeotropic and ex- ification: Principle of cor lumn used for used for con ation. Down comer and	on, azeotropic rectification. oments and its igh equation, Use of ased on Rayleigh pments and its tion of residue and een differential in distillation Reason blication and nt. ure and and difficulty Description of the ninimum and extractive ption of the method tractive distillation, ontinuous denser, Partial and		learning of To identi weakness will be gi according	content. fy studen assignm ven and gly remeo	nts nent dial	11	4	text han	bo louts	
	Student will be able to Students will be able to Students will be able to mg Content distillation : Differntial d distillation, steam distillation extractive distillation, and stillation: Principle, Equip eds of application, Rayle regration for calculation b stillation: Principle, Equi s of application, Calcula position, Difference betwo quilibrium distillation cion : Use of open steam tage, disadvantages, app ation of steam requireme stillation : azeotproic mixt separation, principle, and bod by suitable examples r num boiling azeotrope. illation: need to carry out titon,principle and Descrip table examples tween azeotropic and ex- ification: Principle of cor- lumn used for used for cor-	a Wing) Bhopal OUT SEPARATION PROCESSES - I Student will be able to apply principles of d Students will be able to use different metho ng Content distillation : Differntial distillation, distillation, steam distillation, azeotropic extractive distillation, and rectification. stillation: Principle, Equipments and its eds of application, Rayleigh equation, Use of egration for calculation based on Rayleigh stillation: Principle, Equipments and its s of application, Calculation of residue and oostion, Difference between differential quilibrium distillation cion : Use of open steam in distillation Reason tage, disadvantages, application and ation of steam requirement. stillation : azeotproic mixture and and difficulty separation, principle, and Description of the bod by suitable examples minimum and num boiling azeotrope. illation: need to carry out extractive distillation ification: Principle of continuous distillation, dumn used for used for continuous distillation, dumn used for used for continuous	OUTCOME SEPARATION PROCESSES - I Student will be able to apply principles of distillation for the sep Students will be able to use different methods of distillation acc SCHEME OF Teaching – Learning Method distillation : Differntial distillation, distillation steam distillation, azeotropic extractive distillation, and rectification. stillation: Principle, Equipments and its sof application, Rayleigh equation, Use of egration for calculation based on Rayleigh stillation: Principle, Equipments and its s of application, Calculation of residue and iosition, Difference between differential quilibrium distillation icon : Use of open steam in distillation Reason tage, disadvantages, application and ation of steam requirement. stillation : azeotropic mixture and and difficulty separation, principle, and Description of the dby suitable examples minimum and num boiling azeotrope. illation: need to carry out extractive titon, principle and Description of the method table examples ween azeotropic and extractive distillation ification: Principle of continuous waste, Reboiler and condenser, Partial and ation. Down comer and weir, Use of multiple	a Wing) Bhopal OUTCOME OUTCOME C SEPARATION PROCESSES - I Student will be able to apply principles of distillation for the separation of b Student will be able to use different methods of distillation according to ne SCHEME OF STUDY ng Content Teaching – Learning Method Descript Method distillation : Differntial distillation, distillation, steam distillation, and rectification. Traditional Lecture Method Faculty vertices will be gi according on to identification. stillation: Principle, Equipments and its solds of application, Rayleigh equation, Use of egration for calculation based on Rayleigh stillation: Principle, Equipments and its so of application, Calculation of residue and osition. Difference between differential quilibrium distillation iton : Use of open steam in distillation Reason tage, disadvantages, application and ation of steam requirement. Traditional stillation : azeotropic mixture and and difficulty separation, principle, and Description of the do by suitable examples minimum and hum boiling azeotrope. Here the thod table examples tween azeotropic and extractive distillation iffication: Principle of continuous distillation, lumn used for used for continuous waste, Reboiler and condenser, Partial and ation. Down comer and weir, Use of multiple Here the thop	a Wing) Bhopal OUTCOME C 0 SEPARATION PROCESSES - I Student will be able to apply principles of distillation for the separation of binary liques of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Scheme OF STUDY ng Content Teaching – Learning Method distillation, steam distillation, azeotropic Traditional extractive distillation, Rayleigh equation, Use of egration for calculation based on Rayleigh Traditional stillation: Principle, Equipments and its s of application, Calculation of residue and losition, Difference between differential quilibrium distillation Faculty will expl. adition is use of open steam in distillation Reason tage, disadvantages, application and ation of steam requirement. ad ad difficulty separation, principle, and Description of the method table examples minimum and num boiling azeotrope. illation: need to carry out extractive distillation fification: Principle of continuous distillation, lumn used for used for continuous waste, Reboiler and condenser, Partial and ation. Down comer and weir, Use of multiple	a Wing) Bhopal OUTCOME OUTCOME C 0 2 SEPARATION PROCESSES - I Student will be able to apply principles of distillation for the separation of binary liquid mix Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use differential distillation, aceotropic extractive distillation, and rectification. stillation: Principle, Equipments and its so of application, Calculation of residue and osition, Difference between differential quilbrium distillation is aceotropic mixture and and difficulty separation, principle, and Description of the dby suitable examples minimum and num boiling azeotropic mixture distillation for the method table examples minimum and num boiling azeotropic on the method table examples minimum and num boiling azeotropic on the method table examples minimum and tuon for used for continuous waste, Reboiler and condenser, Partial and ation. Down comer and weir, Use of multiple	a Wing) Bhopal OUTCOME C 0 2 SEPARATION PROCESSES - 1 Student will be able to apply principles of distillation for the separation of binary liquid mixtures. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. students will be able to use different methods of distillation according to need. students will be able to use different methods of distillation according to need. students will be able to use differential distillation, and rectification. stillation: Principle, Equipments and its of application, Rayleigh equation, Use of application, Calculation of residue and ostion, Difference between differential quilibrium distillation for esidue and accordingly remedial and tutorials will be taken. stillation: Principle, Equipments and difficulty separation, principle, and Description of the distillation fields of steam requirement. stillation: Principle end Description of the method table examples minimum and num boiling azeotropic and extractive distillation, floation rele and Description of the method table examples minimum and num boiling azeotropic and extractive distillation, lumn used for used for continuous waste, Reboil	a Wing) Bhopal OUTCOME C 0 2 0 SEPARATION PROCESSES - I Student will be able to apply principles of distillation for the separation of binary liquid mixtures. Students will be able to use different methods of distillation according to need. Students will be able to use different methods of distillation according to need. SCHEME OF STUDY ng Content Teaching – Learning Method Description of T-L Process Teach Pract. istillation : Differntial distillation, azeotropic Traditional Lecture Method Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken. 11 4 stillation: Principle, Equipments and its of application, acturative and and difficulty separation, principle, Equipments and its so of application, calculation of residue and osciton, Difference between differential quilibrium distillation Reason tage, disadvantages, application and ation of steam requirement. stillation: azeotropic minimum and unm boiling azeotrope. stillation: is used for continuous distillation, floand table examples stillation is used for continuous stillation, floand table examples minimum and unm boiling azeotropic. stillation: waste, Reboiler and condenser, Partial and ation. Down comer and weir, Use of multiple stillation stillation stillation	Branch Code Course Code Code OUTCOME C 0 2 0 3 SEPARATION PROCESSES - 1 Student will be able to apply principles of distillation for the separation of binary liquid mixtures. 3 Students will be able to use different methods of distillation according to need. SCHEME OF STUDY Teaching - Process Teach Pract. LRs g Content Teaching - Learning Method Process Teach Pract. LRs distillation : Differntial distillation, add rectification, situation : Principle, Equipments and its of application, Rayleigh equation, Use of egration for calculation based on Rayleigh Traditional Lecture Method Faculty will explain accordingly remedial and tutorials will be taken. 11 4 Sug teach stillation : Difference between differential quilibrium distillation accortoric based on Rayleigh Traditional Lecture Method Faculty will explain accordingly remedial and tutorials will be taken. 11 4 Sug teach stillation : Principle, Equipments and its of application, Calculation based on Rayleigh stillation: Principle, act open steam in distillation Reason tage, disadvantage, application and ation. Decorption of the do by suitable examples Image: Sup teach Image: Sup teach waste, Reboiler and condenser, Partial and ation. Down comer and weir, Use of multiple Image: Sup teach Image: Sup teach Image: Sup teach Image: Sup teach	a Wing) Bhopal SCHEME FOR LEARNING OUTCOME Granch Code Code

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	25	Question paper	External
		ADDITIONAL INSTRUCTIONS	FOR THE HOD/ I	FACULTY (IF ANY)	
		N	il		

RGPV (Diploma Wing) Bhopal			Branch Code			Cou	rse Code	CO Code	LO Code	Format No. 4	
				С	0	2			3	5	
E NAME	SEPARATION P	ROCESSES I			1	1		I	1		
cription	Student will be able	e to apply principles of distilla	ation for the sep	aration of b	inary liq	uid mix	tures.				
cription	Students will be ab	le to operate different types of	f distillation app	oaratus							
		S	SCHEME OF	STUDY							
Learning	Content	Teaching –Learning Method	Desc	ription of Process	T-L			Pract. /Tut Hrs	s. LRs	Require	d Remarks
tray ,bubble vapour liquid ed and glass dist generate data,	cap tray column quilibrium apparatus illation column to and to calculate		in lab and de take reading	now to				Seti	ıp		
		501	IENIE OF AS								
Method of	Assessment	Description of Assess	sment	Maximul Marks	n		Reso	ources Requ	uired		External / Internal
Laboratory Tes	t by observation	take reading and then ca	lculate	20			1	Rating Scale	2		External
	· · ·	ADDITIONAL INSTRU	UCTIONS FC	R THE H	OD/ FA	CULI	TY (IF)	ANY)			
			Nil								
	E NAME cription cription Learning operation of bat tray ,bubble vapour liquid ec and glass dist generate data, different param	E NAME SEPARATION P cription Student will be able cription Students will be able approximation Students will be able approximation Students will be able approximation Students will be able approximatio	PV (Diploma Wing) Bhopal OUTCOM E NAME SEPARATION PROCESSES I cription Student will be able to apply principles of distillation cription Students will be able to operate different types of cription Students will be able to operate different types of Learning Content Teaching -Learning Method operation of batch distillation, sieve tray ,bubble cap tray column, vapour liquid equilibrium apparatus and glass distillation column to generate data, and to calculate different parameters Lab - demonstration SCH Method of Assessment Description of Assess Laboratory Test by observation Examiner will ask to stut take reading and then cai in front of him and will correctness of result	E NAME SEPARATION PROCESSES I cription Student will be able to apply principles of distillation for the sep cription Students will be able to operate different types of distillation approximation cription Students will be able to operate different types of distillation approximation cription Students will be able to operate different types of distillation approximation operation of batch distillation, sieve tray , bubble cap tray column, vapour liquid equilibrium apparatus and glass distillation column to generate data, and to calculate different parameters Lab - demonstration Faculty will ein aba and derivate reading SCHEME OF SCHEME OF Sculty will e able to apply principles of distillation approximation operation of batch distillation, sieve tray , bubble cap tray column, vapour liquid equilibrium apparatus and glass distillation column to generate data, and to calculate different parameters Lab - demonstration Faculty will ein aba and derivate reading and the calculate Method of Assessment Description of Assessment SCHEME OF AS Laboratory Test by observation Examiner will ask to students to take reading and then calculate in front of him and will asses correctness of result ADDITIONAL INSTRUCTIONS FOR COME	PV (Diploma Wing) Bhopal OUTCOME C OUTCOME C E NAME SEPARATION PROCESSES I cription Student will be able to apply principles of distillation for the separation of b cription Students will be able to operate different types of distillation apparatus scription Students will be able to operate different types of distillation apparatus scription Students will be able to operate different types of distillation apparatus operation of batch distillation, sieve tray ,bubble cap tray column, vapour liquid equilibrium apparatus and glass distillation column to generate data, and to calculate different parameters Lab - demonstration Faculty will explain the in lab and demonstrate function Faculty will explain the in lab and demonstrate function Method of Assessment Description of Assessment Maximur Marks Laboratory Test by observation Examiner will ask to students to take reading and then calculate in front of him and will asses correctness of result 20 ADDITIONAL INSTRUCTIONS FOR THE H ADDITIONAL INSTRUCTIONS FOR THE H	PV (Diploma Wing) Bhopal OUTCOME Iteration of the second of the se	OFFENDENCI FOR DEFINITION OF TERMINIATION OF OUTCOME C 0 2 2 Lab 0 2 2 2 Lab 0 2 2 2 Question 2 2 2 2 Lab 0 <th< td=""><td>PV (Diploma Wing) Bhopal Definition of OUTCOME Image: Content of Cont</td><td>PV (Diploma Wing) Bhopal Colspan="4">Colspan="4"Colspan="4"Colspan="4">Colspan="4"Colspan="4">Colspan="4"Colspan="</td><td>SCHEME FOR LEARNING OUTCOME Course Code Course Code Code Course Code Code Code Code Code Code Code Code Code SEPARATION PROCESSES I Course Code of 2 Code Code SEPARATION PROCESSES I SETEME OF STUDY Students will be able to operate different types of distillation apparatus SEHEME OF STUDY Code Method Process Fracth RHRs. Pract. Fract. Fract. Fract. Lab able to operate different types of distillation apparatus SCHEME OF STUDY Teaching -Learning Method Process Fract. Fract. Fract. Fract. Fract. Lab able demonstration Faulty will explain the content in lab and demonstrate content in lab and demonstrate content take reading Mathema different parameters SCHEME OF ASSESMENT Mathema different par</td><td>PY (Diploma Wing) Bhopal SCHEME FOR LEARNING OUTCOME Branch Code Course Code Code</td></th<>	PV (Diploma Wing) Bhopal Definition of OUTCOME Image: Content of Cont	PV (Diploma Wing) Bhopal Colspan="4">Colspan="4"Colspan="4"Colspan="4">Colspan="4"Colspan="4">Colspan="4"Colspan="	SCHEME FOR LEARNING OUTCOME Course Code Course Code Code Course Code Code Code Code Code Code Code Code Code SEPARATION PROCESSES I Course Code of 2 Code Code SEPARATION PROCESSES I SETEME OF STUDY Students will be able to operate different types of distillation apparatus SEHEME OF STUDY Code Method Process Fracth RHRs. Pract. Fract. Fract. Fract. Lab able to operate different types of distillation apparatus SCHEME OF STUDY Teaching -Learning Method Process Fract. Fract. Fract. Fract. Fract. Lab able demonstration Faulty will explain the content in lab and demonstrate content in lab and demonstrate content take reading Mathema different parameters SCHEME OF ASSESMENT Mathema different par	PY (Diploma Wing) Bhopal SCHEME FOR LEARNING OUTCOME Branch Code Course Code Code

RC	GPV (Diploma	a Wing) Bhopal	S	CHEME FOR LEARNING OUTCOME	G Br	anch Co	de	Cou	rse Code	CO Code	LO Code	Format No. 4
					C	0	2			4	1	
COURS	E NAME	SEPARATION P	PROCESSE	S I					I			
CO De	scription	Student will be abl	e to calculat	e reflux ratio , number of plate	es, water and st	eam requi	irement	ts for the	column			
LO Des	scription	Student will be abl	e to calculat	e number of plates, water and	steam require	nents for	the col	umn.				
	-			SCHEME	OF STUDY							
S. No.	Learnir	ng Content		Teaching –Learning Method	Descripti Pro			leach Hrs.	Pract. /Tut Hrs	LRs	Requir	ed Remarks
1	reflux ratio, In product, calculation of Cabe Thiele M and Ponchon Assumption in method: Assu heat of mixing heat of vapori diffusion, rect reason to nam rectifying and bottom opera Intersection o and stripping of q line for va feed plate, Ca rectifying and and location o method for di	ponent balance, Ref mportance of reflux in No. of plates: Introdu Method, Lewis Sorrel I Sevrit method, MCCabe and Lewis so mptions of No heat lo g and dilution, equimo zation and Equimolal ifying and stripping se ning so, nomenclature stripping section, Top ting line and their eq f operating lines of r sections. Equation of arious types of feed. L alculation of number stripping section of t of feed plate Mc Cabe fferent feed condition water and steam req	n purity of uction to Mo Method, orrel osses, No olal latent counter ection and e in p and uations. rectifying q line, slope ocation of of plates in he column Thiele ns, and		Faculty wil learning co To identify weakness assignment given and accordingly and tutorial taken.	ntent. students will be remedia	1	11	4	text han	gested bod douts ver point	
S. No.	Mathad	of Assessment	Docor	SCHEME OF A	OF ASSESSMENT Maximum Marks Resources Required						External /	

Theory Exam	Theory questions related to the learned content will be asked in the university question paper	25	Question paper	External
	ADDITIONAL INSTRUCTIONS F	FOR THE HOD/	FACULTY (IF ANY)	
	Ni	1		

	RGPV (Diploma Wing) Bhopal	Wing) Bhopal	SCHEME FOR L OUTCOM		Branch Code			Course Code		Code Co		Format No. 4
OUDOD					C	0	2			4	2	
OURSE	NAME	SEPARATION PR	OCESSES I			_			I I			
CO Desci	ription	Student will be able t	o calculate reflux ratio , nun	nber of plates, v	vater and st	eam requ	iirement	s for the	e column			
LO Desci	ription	The students will be a	able select appropriate reflux	x ration for a pa	rticular ope	ration						
	_		S	SCHEME OF	STUDY							
S. No.	Learning	, Content	Teaching –Learning Method		ription of Process	T-L		'each Hrs.	Pract. /Tut Hrs	LRs	Require	ed Remarks
מ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ נ	inimum reflux ratio : oearation of column at minimum reflux ratio, calculation of minimum reflux ratio by graphical method and Underwood and Fenske equation. Fotal reflux: Definition, what happer when the column is operated at total reflux, Calculation of no of plates at total reflux by Fenske equation Optimum reflux ratio: Factor affecting the selection of optimum reflux ratio, graphical selection of optimum reflux ratio.			content. To identify s assignment v accordingly tutorials will	ulty will explain learning				2	text hand	gested boo louts er point	
			SCH	EME OF AS	SESSME	T						
S. No.	Method of	Assessment	Description of Assess	sment	Maximu Marks	n		Reso	urces Requ	ired		External / Internal
Т	Theory Exam		Theory questions related to the learned content will be asked in the university question paper20					Question paper Extern				External
			ADDITIONAL INSTRU	JCTIONS FO	R THE H	OD/ FA	CULT	Y (IF A	ANY)			
				Nil								

RG	SPV (Diploma	a Wing) Bhopal	SCHEME FOR L OUTCOM		Br	anch Co	ode	Cou	Course Code		e LO Code		mat No. 4
					С	0	2			4	3	-	
OURS	E NAME	SEPARATION PR	ROCESSES I		I	_			I		I		
CO Des	scription	Student will be able	to calculate reflux ratio, num	nber of plates,	water and st	eam req	uiremen	ts for th	e column				
LO Des	scription	. Student will be abl	e to explain importance of op	otimum parame	ter selection	for the	smooth	running	of column.				
			S	SCHEME OF	STUDY								
S. No.	Learni	ng Content	Teaching –Learning Method	Desc	ription of Process	T-L		Feach Hrs.	Pract /Tut H		ls Requi	red	Remarks
	 Dearning Content onstruction, merits and demerits of sieve tray, bubble cap tray and valve tray and their comparision. Probler encountered in the operation of tra- columns: Entrainment, weeping, conning, dumping, priming, loading and flooding. Efficiency of distillation column overall efficiency, Murphree plate efficiency and point efficiency. 		1 7	Faculty will content. To identify assignment accordingly tutorials wil	students w will be giv remedial a		4 1			Suggested text book handouts power point			
			SCH	EME OF AS	SESSME	T							
S. No.	Method	of Assessment	Description of Assess	sment	Maximu Marks	n		Reso	ources Rea	quired			External / Internal
	Theory Exar	n	learned content will be a	Theory questions related to the learned content will be asked in the university question paper				Question paper					External
		I	ADDITIONAL INSTRU	JCTIONS FO	OR THE H	OD/ FA	ACUL	ΓY (IF	ANY)				
				Nil									

RG	SPV (Diploma	Wing) Bhop	pal SCH	IEME FOR LE OUTCOM		Bra	nch C	ode	Cou	rse Code	CO Code	LO Code F	Format No. 4
						C	0	2			5	1	
COURS AME	Е	SEPARATI	ON PROCESSES	I			-						
CO Des	scription	Student will I	be able to control op	eration of absorpt	ion in packed	and plate to	owers.						
LO Des	cription	Student will	be able to correlate d	lifferent types of 1	mass transfer	coefficients							
				SC	CHEME OF	STUDY							
S. No.	Learnin	g Content		Teaching – Learning Method	Dese	cription of Process	T-L		Teach Hrs.	Pract. /Tut Hrs	LRs	Required	l Remarks
1	concept o soluble an law, solub transfer co explanatic and overa interrelati types of m driving for	m solubility of a f highly soluble d almost insolu- ility curve and pefficients : def on, Concept of Il mass transfe ons. nomencla nass transfer co		Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken. Students will be asked to take reading and then calculate the result. The correctness of result will be assessed				4	2	text han	gested bool douts er point	c	
				SCHE	CME OF AS	SESSME	JT						
S. No.	Method o Assessme		Description of	of Assessment		Maximu Marks	n		Reso	ources Requ	ired		External / Internal
	Theory Exan	co	Theory questions r ontent will be aske uestion paper			10		Ques	tion pape	r			External
		I	ADDITIO	NAL INSTRU	CTIONS FO	R THE H	OD/ F.	ACUI	TY (IF	ANY)			
					Nil								

RG	SPV (Diplom	a Wing) Bhopal		SCHEME FOR I	Br	anch Co	ode	Cou	rse Code	CO Code	LO Code	Format No. 4	
						C	0	2			5	2	
OURS AME	E	SEPARATION I	PROCES	SSES I									
CO Des	scription	Student will be ab	le to cont	rol operation of absor	rption in packed	and plate t	owers.						
LO Des	cription	Student will be ab	le to expl	ain construction and	working of equi	pments for	absorptic	on.					
	T				SCHEME OF	-							
S. No.	Learni	ing Content		Teaching – Learning Method	Desc	ription of Process	T-L		Teach Hrs.	Pract. /Tut Hrs	LRs	Require	d Remarks
1	1 Packed tower for absorption: I study of construction and wor packed tower. Characteristics of packing. types of tower packing : and regular packing. their charact merits and demerits. Different t random packings : constructio figure. Channelling in packed tow methods to minimise it. Const working and main feature of scrubber and wetted wall column			Traditional Lecture Method	Faculty will content. To identify assignment accordingly tutorials wil	students w will be giv remedial a l be taken	eakness en and ind		4	2	Suggested text boo handouts power point		
	1			SCI	HEME OF AS								
S. No.	Method	of Assessment	De	escription of Asses	sment	Maximu Marks	m		Reso	ources Requ	ired		External / Internal
	Theory Exa	m	learn	bry questions related and content will be a university question	asked in	15 Que				Question pap	er	External	
			ADD	ITIONAL INSTR	UCTIONS FO	OR THE H	IOD/ FA	CUL	TY (IF	ANY)		I	
					Nil								

RGPV (Diploma Wing) Bhopal			SCHEME FOR LEARNING OUTCOME		Bra	Branch Code		Course Code		CO Code	LO Code	Format No. 4
					C	0	2				3	
OURS	E NAME	SEPARATION P	ROCESSES I		I		1		I	1		
CO Des	scription	Student will be abl	e to control operation of absor	ption in packed	and plate to	owers.						
LO Des	scription	Student will be abl	e to operate absorption equipn	nents.								
	-		S	SCHEME O	F STUDY							
S. No.	. Learning Content		Method		scription of T-L Process			'each Hrs.	Pract. /Tut Hrs	. LRs Requir		red Remarks
1	Operation column an absorption generation of	of wetted wal nd packed be column an data.	d d	Faculty wil in lab and d take reading	emonstrate g.	how to	L		12	Seti	eriment ıp Manual	
S. No.	Method of Assessment		Description of Assessment		Maximu Marks	n		Resources Required				External / Internal
	Laboratory Test by observation		Examiner will ask to students to take reading and then calculate in front of him and will asses correctness of result		20			ŀ	Rating Scale	,		Internal
			ADDITIONAL INSTRU	UCTIONS FO	OR THE H	OD/ FA	CULT	Y (IF	ANY)			
				Nil								

	5	5 4	
, , , , , , , , , , , , , , , , , , ,			
, ,			
Pract. /Tut Hrs.		LRs Require	ed Remarks
	t ł	Suggested text boo handouts power point	k
Resources Required			External / Internal
Question paper			
		I	
	-		

SUBJECT – SEPARATION PROCESSES I

V SEMESTER CHEMICAL ENGINEERING

LIST OF EXPERIMENTS

S.No.	Name of experiments
1.	Determination of distillation characteristics of a binary mixture
2.	Determination of relative volatility of a binary mixture
3.	Verification of Rayleigh equation of a binary mixture
4.	Study and live demonstration of sieve tray column
5.	Study and live demonstration of bubble cap column
6.	Differential distillation of binary mixture
7.	Calculation of vaporization efficiency for steam distillation
8.	To find out rate of diffusion
9.	To find out rate of diffusion
10.	To find out diffusion coefficient for liquid-liquid diffusion
11	Study of differential types of packing and packed tower
12	To find out rate of absorption of a gas in a liquid in a packed column