LESSON PLAN OF 6TH SEMESTER(2020-21) CHEMICAL ENGINEERING		
DISCIPLINE: CHEMICAL	**Semester:-6TH**	**NAME OF THE TEACHING FACULTY** **PRATEEK KUMAR DAS**
SUBJECT: NOBEL SEPARATION PROCESS	**No of days per Week Allotted : 04**	**SEMESTER: APRILTO AUGUST No of Weeks:- 15**
Week	**Class/ Day**	**Theory/ Practical Topics**
1ST	1st	What is a membrane?
	2nd	Basic principle of membrane separation
	3rd	Classification of membrane processes
	4th	Classification of membrane processes
2ND	1st	Advantages and disadvantages of membrane processes
	2nd	Major application area of membrane separation
	3rd	Future processes of membrane separation
	4th	Types of synthetic membrane
3rd	1st	Micro porous membrane
	2nd	Asymmetric membrane
	3rd	Thin film composite
	4th	Electrically charged membrane
4th	1st	Inorganic membrane
	2nd	Membrane module- Plate and frame
	3rd	Membrane module- Tubular
	4th	Membrane module- Spiral wound
5th	1st	Membrane module- Hollow fiber
	2nd	Membrane material and Pore Characteristics
	3rd	Membrane material and Pore Characteristics
	4th	Types of flow pattern
6th	1st	Concept of Osmosis
	2nd	Determination of osmotic pressure
	3rd	Thermodynamic consideration of osmosis
	4th	Isotonic solution
7th	1st	High Pressure and low pressure reverse osmosis
	2nd	Advantages and disadvantages of reverse osmosis
	3rd	Forward Osmosis- Elementary idea and application
	4th	Forward Osmosis- Elementary idea and application
8th	1st	Membrane plugging
	2nd	Application of reverse osmosis
	3rd	Principle of Nano filtration
	4th	Process limitation of Nano filtration.

9th	1st	Industrial application of Nano filtration
	2nd	Principle of Ultra filtration and its advantages
	3rd	Ultra filtration vis-à-vis conventional filtration
	4th	Configuration of Ultra filtration unit
10th	1st	Configuration of Ultra filtration unit
	2nd	Types of devices in Ultra filtration.
	3rd	Factors affecting the performance of Ultra filtration
	4th	Industrial application of Ultra filtration
11th	1st	Industrial application of Ultra filtration
	2nd	Principle of Micro filtration
	3rd	Fouling in Micro filtration membrane
	4th	Application of Micro filtration
12th	1st	Basic principle of gas separation
	2nd	Membranes for gas separation
	3rd	Application of Gas separation
	4th	Basic principle of Pervaporation
13th	1st	Membrane characteristics in pervaporation
	2nd	mass transfer in pervaporation & Application
	3rd	Principle of Ion exchange
	4th	Principle of Ion exchange
14TH	1st	Characteristic of ion exchange resin
	2nd	Application of ion exchange
	3rd	Application of ion exchange
	4th	Membrane Distillation
15TH	1st	Membrane reactors
	2nd	Objective questions discussion
	3rd	Objective questions discussion
	4th	Objective questions discussion