



**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**End Semester Examination, December 2021**

**Course: Process Chemistry**  
**Program: B.Tech (CE+RP)**  
**Course Code: CHCE 2018**

**Semester: III**  
**Time 03 hrs.**  
**Max. Marks: 100**

**Instructions: Question Paper contains 2 Pages**

<b>SECTION A</b>		<b>5 X 4 = 20 Marks</b>	
S. No.		Marks	CO
Q 1	Name any two unit operations each based on vapor-liquid and solid-liquid equilibrium. Give an example each.	4	CO1
Q 2	What are the four major constituents of Portland cement and how are they formed?	4	CO2
Q 3	What is the most important challenge in vapor phase oxidation of organic compounds using oxygen as oxidizing agent? Give any two ways of overcoming them.	4	CO3
Q 4	Name any two B vitamins and their uses.	4	CO4
Q 5	Draw the organizational structure of occupational health and safety management.	4	CO5
<b>SECTION B</b>		<b>4 X 10 = 40 Marks</b>	
Q 6	(a) Based on the mode of regeneration, how is adsorption classified. Give any one advantage and disadvantage of each one of them. (b) Discuss any two challenges of process chemistry of urea production and means of overcoming them.	5 5	CO1 CO2
Q 7	With the help of diagram, describe the process unit and chemistry of hardening of fats.	10	CO3
Q 8	Draw the process flow diagram and explain the manufacture of alkyl aryl detergents. (Or) Draw the process flow diagram and the chemistry of the hydroformylation.	10	CO4
Q 9	Discuss the different classes of fire and methods of their extinction.	10	CO5
<b>SECTION C</b>		<b>2 X 20 = 40 Marks</b>	
Q 10	(a) With the process flow diagram explain the manufacture of elemental Sulphur by Claus process. (b) Describe any one process unit of nitration with the help of diagram. Explain the mechanism of aromatics nitration and effect of substituents on the product distribution. (Or) (a) Explain the various stages involved in the manufacture of white-pottery.	8 12 8	CO2 CO3 CO2

	(b) Explain the thermodynamics and mechanism of halogenation by addition. Draw and describe the process equipment for the manufacture of ethylene dichloride.	<b>12</b>	<b>CO3</b>
Q 11	(a) What are antibiotics? Explain the manufacture of any one antibiotics. (b) Explain the various steps involved in the effluent treatment and quality parameters of treated water to be achieved.	<b>10</b>	<b>CO4</b>
		<b>10</b>	<b>CO5</b>