Q. Code:582686

Reg. No. | | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Third Semester

CH18304 – CHEMICAL PROCESS INDUSTRIES I

(Chemical Engineering)

(Regulation 2018 / 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Outline the basic knowledge of the process carried out in chemical industry and review its practical importance.	**3**
CO 2	Discuss the role of chemical engineers in process industries, Process Plant Safety and environment	**3**
CO 3	Provide insight into the technological methods in problem solving in process plant.	**3**
CO 4	Interpret about the salient features of the process.	**4**
CO 5	Manipulate the bridge between theoretical and practical concept used in industry.	**3**

PART - A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	List the uses of sodium hypochlorite.	**1**	**2**
2.	Name a few corrosion resistant materials used in chemical process industries.	**1**	**2**
3.	Mention the catalysts used in contact process.	**2**	**2**
4.	Give the condition made to maximize the conversion of SO_2 to SO_3.	**2**	**2**
5.	Name any four special glasses.	**3**	**2**
6.	Mention any two properties of refractories.	**3**	**2**
7.	Brief rock beneficiation process.	**4**	**2**
8.	Give the chemical equation for the manufacture of nitric acid.	**4**	**2**
9.	Classify fertilizers by giving suitable example.	**5**	**2**
10.	List the uses of urea as a fertilizer.	**5**	**2**

PART - B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	**(i)** With a neat flow diagram, explain the manufacture of Soda ash by Solvay process. (10 marks) **(ii)** Identify the engineering problems encountered in the Solvay process. (4 marks)	**(14)**	**1**	**3**

(OR)

(b)	**(i)** Explain the manufacturing process of sodium bicarbonate with a neat Process flow diagram. (10 marks) **(ii)** Discuss the applications of Chlorine and caustic soda. (4 marks)	**(14)**	**1**	**3**
12. (a)	With a neat flow sheet explain the manufacture of sulfuric acid by contact process.	**(14)**	**2**	**3**
	(OR)			
(b)	Write on the recovery methods of sulfur from polluting gases of sulfur based process industries.	**(14)**	**2**	**3**
13. (a)	Explain the manufacturing process of Portland cement with a neat diagram and write the major engineering problems involved in this process.	**(14)**	**3**	**3**
	(OR)			
(b)	Describe the chemical reactions and manufacturing steps involved in flat glass manufacture using a neat flow diagram.	**(14)**	**3**	**3**
14. (a)	Explain the process used to manufacture synthetic ammonia. Also mention the properties and uses of ammonia.	**(14)**	**4**	**3**
	(OR)			
(b)	Describe the manufacture of Phosphoric acid by strong acid method with a neat Process flow diagram.	**(14)**	**4**	**3**
15. (a)	**(i)** Discuss the role of Bio-fertilizers in plant growth. (6 marks) **(ii)** Elaborate the manufacture of Potassium chloride in detail. (8 marks)	**(14)**	**5**	**3**
	(OR)			
(b)	Explain with neat process flow diagram the production of Triple super phosphate and compare with super phosphate.	**(14)**	**5**	**3**

PART - C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	How do you envision advancements in fertilizer technology shaping the future of agriculture and global food security	**(10)**	**1**	**5**

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