Q. Code:719812

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

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

Sixth Semester

CH18028 – FERTILIZER TECHNOLOGY

(Chemical Engineering)

(Regulation 2018 / 2018A)

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

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Acquire knowledge in the various fertilizer manufacturing methods.	**3**
CO 2	Interpret the list of essential nutrients of soil and fertilizer for the plant growth.	**3**
CO 3	Identify the raw materials for fertilizer manufacture and discuss characteristics & specifications of fertilizer products.	**3**
CO 4	Classify the fertilizer products and discuss appropriate manufacturing techniques.	**3**
CO 5	Illustrate the various advantages of Miscellaneous fertilizers.	**3**

PART - A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Mention two significant effects of nitrogen deficiency in plants.	**1**	**2**
2.	Choose the best fertilizer for rice crops and justify.	**1**	**3**
3.	Write the phosphate content in terms of P_2O_5 of various phosphatic fertilizers.	**2**	**2**
4.	List few benefits of thermal fertilizers.	**2**	**2**
5.	How do the properties of NaCl differ from KCl?	**3**	**2**
6.	Give few sources of potassium for manufacture of potassic fertilizers.	**3**	**2**
7.	List few applications of NPK fertilizers.	**4**	**2**
8.	Outline the benefits of nitrophosphates.	**4**	**2**
9.	Brief the benefits of mixed fertilizers.	**5**	**2**
10.	Differentiate prilled and granulated fertilizers.	**5**	**2**

PART - B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Describe the process of producing Ammonium Chloride using a concise flowchart and discuss its effectiveness as a fertilizer.	**(14)**	**1**	**3**
	(OR)			
(b)	Detail the role played by the fertilizer industry in today's Indian context and discuss its importance and significance.	**(14)**	**1**	**3**

12. (a)	Elaborate the production techniques of sulphuric acid with flowcharts and discuss its application in the manufacture of phosphatic fertilizers.	**(14)**	**2**	**3**
	(OR)			
(b)	Discuss the handling and storage precaution to be followed for the following fertilizers. (i) Single super phosphate (5 marks) (ii) Triple super phosphate (5 marks) (iii) Phosphoric acid (4 marks)	**(14)**	**2**	**3**
13. (a)	Explain the importance of potassium chloride as a fertilizer and explain their production techniques with flow diagrams.	**(14)**	**3**	**3**
	(OR)			
(b)	Discuss the production techniques of potassium sulphate fertilizer with a neat flowchart.	**(14)**	**3**	**3**
14. (a)	Discuss the manufacture of mono-ammonium phosphate with its specific applications and benefits.	**(14)**	**4**	**3**
	(OR)			
(b)	Elaborate the production of urea with a flowchart and the technical issues faced during its production.	**(14)**	**4**	**3**
15. (a)	Discuss the need for nutrients for plant growth. Additionally list and explain the secondary and micro nutrients.	**(14)**	**5**	**3**
	(OR)			
(b)	Write short notes on the following (i) Fluid fertilizers (7 marks) (ii) Controlled release fertilizers (7 marks)	**(14)**	**5**	**3**

PART - C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Propose a design for a futuristic fertilizer delivery system that optimizes nutrient absorption, minimizes environmental impact and adapts to varying soil and crop conditions. Discuss the potential challenges and benefits of implementation of such a system in modern agriculture.	**(10)**	**4**	**5**

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