

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2180509****Date: 19/11/2018****Subject Name: Fertilizer Technology****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Q1 is compulsory question.

		MARKS
Q.1	(a) Discuss about the development of fertilizer industries in India.	03
	(b) Discuss the Various types of fertilizers.	04
	(c) Giving the names of major fertilizer industries in India, briefly discuss about Fertilizer production and its consumption.	07
Q.2	(a) Explain Chemical and physical properties of urea.	03
	(b) Briefly discuss about the need for synthetic fertilizers in India with examples.	04
	(c) Explain role of various nutrients with deficiency symptoms in the development of crops.	07
	OR	
	(c) Discuss about the production of ammonia by Kellogg process with diagram.	07
Q.3	(a) Describe the preparation of potassium sulfate.	03
	(b) Explain Chemical, physical properties of ammonia.	04
	(c) Discuss about the preparation of ammonium chloride from ammonium sulphate and sodium Chloride.	07
	OR	
Q.3	(a) Explain comparison between macro and the micro elements.	03
	(b) Discuss about the application of fertilizers considering Nutrients.	04
	(c) Describe manufacturing of ammonia with Haldor Topsoe process with diagram.	07
Q.4	(a) Explain Chemical and physical properties of Nitric acid.	03
	(b) Explain applications of nitric acid.	04
	(c) With neat flow sheet discuss manufacturing of potassium chloride from sylvinit.	07
	OR	
Q.4	(a) Write steps for synthesis of ammonia gas by Catalytic partial oxidation.	03
	(b) Explain Toyo-Koatsu total recycle process for urea.	04
	(c) Explain the manufacture of urea by CO ₂ stripping process with diagram.	07
Q.5	(a) Describe the industrial applications of ammonia.	03
	(b) Briefly discuss about the process of concentration of nitric acid using Mg (NO ₃) ₂	04
	(c) Describe the process of manufacturing of calcium ammonium nitrate (CAN).	07
	OR	
Q.5	(a) Briefly discuss about the types of bio fertilizers.	03
	(b) Write a note on design aspects of ammonia converters.	04
	(c) Explain the manufacturing of nitric acid by intermediate pressure ammonia oxidation Process with diagram.	07
