

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VIII (NEW) EXAMINATION – WINTER 2020

Subject Code:2180509

Date:21/01/2021

Subject Name:Fertilizer Technology

Time:02:00 PM TO 04:00 PM

Total Marks: 56

Instructions:

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss the industrial applications of ammonia. **03**
 (b) What are the advantages of using bio fertilizers? State their limitations. **04**
 (c) Stating the classification of plant nutrients, discuss the role of essential elements in plant growth. **07**
- Q.2** (a) Justify the need for the production of synthetic fertilizers in India. **03**
 (b) Briefly discuss about the classification of fertilizers. **04**
 (c) Explain in detail, the development of fertilizer industry, fertilizer production and consumption in India. **07**
- Q.3** (a) Briefly explain the process of increasing the concentration of nitric acid by $Mg(NO_3)_2$ **03**
 (b) Discuss the properties and applications of nitric acid. **04**
 (c) Describe the manufacture of nitric acid by intermediate pressure ammonia oxidation process. **07**
- Q.4** (a) Discuss about the storage and transportation of ammonia. **03**
 (b) Briefly discuss about the production of synthesis gas by steam hydrocarbon reforming. **04**
 (c) Describe the production of ammonia by Kellogg process with a neat diagram. **07**
- Q.5** (a) State the applications of urea. **03**
 (b) Briefly explain the production of ammonium sulfate from ammonium carbonate and gypsum. **04**
 (c) With a neat diagram, describe the manufacture of ammonium nitrate by prilling process. **07**
- Q.6** (a) Briefly discuss about the application of fertilizers considering the types of crops. **03**
 (b) Write a short note on design aspects of ammonia converters. **04**
 (c) Describe the manufacture of NPK fertilizer with a process flow diagram. **07**
- Q.7** (a) State the properties and uses of potassium chloride. **03**
 (b) Briefly explain the preparation of potassium nitrate and potassium sulfate. **04**
 (c) Describe the manufacture of potassium chloride from sylvinit in detail. **07**
- Q.8** (a) Justify the need for using bio fertilizers more in India. **03**
 (b) Briefly explain a method of preparation of calcium ammonium nitrate (CAN). **04**
 (c) Write short notes on nitrogen-fixing bio fertilizers and phosphate-solubilizing bio fertilizers. **07**
