

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2180509****Date:13/05/2019****Subject Name:Fertilizer Technology****Time:10:30 AM TO 01:00 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) Explain applications of nitric acid. **03**
 (b) Explain Chemical and physical properties of Nitric acid. **04**
 (c) Describe manufacturing of ammonia with Haldor Topsoe process with diagram. **07**
- Q.2** (a) Explain Chemical and physical properties of urea. **03**
 (b) Discuss about the application of fertilizers considering Nutrients. **04**
 (c) Explain the manufacture of urea by CO₂ stripping process with diagram. **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) With neat flowsheet discuss manufacturing of potassium chloride from sylvinit. **07**
- OR**
- Q.3** (a) Explain how soil factors that affect the plant availability of the primary or fertilizer nutrients (N, P and K). **03**
 (b) Write a brief note on the preparation of bio fertilizers. **04**
 (c) Stating the role of essential elements in plant growth. **07**
- Q.4** (a) What are the major Hazards of fertilizer **03**
 (b) Explain applications of ammonia. **04**
 (c) Explain the different types of crop cultivated in India with development of crops. **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) Describe the manufacture of ammonium nitrate by prilling process in detail **07**
- Q.5** (a) What are the safety issues consider during handling of urea **03**
 (b) Briefly discuss about the process of concentration of nitric acid using Mg (NO₃)₂ **04**
 (c) Describe the process of manufacturing of calcium ammonium nitrate (CAN). **07**
- OR**
- Q.5** (a) Discuss about the rate growth of fertilizer industries in India. **03**
 (b) Discuss the Various type of fertilizers which are using in India **04**
 (c) Explain about Fertilizer production and its consumption. Give the names of major fertilizer industries in India **07**
