



# 17314

15116

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All questions are **compulsory**.
  - (2) Illustrate your answers with neat sketches **wherever** necessary.
  - (3) Figures to the **right** indicate **full** marks.
  - (4) Assume suitable data, if **necessary**.

**Marks**

1. A) Attempt **any six** : **12**
- a) Write reactions involved in manufacturing of  $H_2SO_4$  by DCDA process.
  - b) Write any two industrial use of  $H_2SO_4$ .
  - c) Write physicochemical principles for maximum yield of  $SO_3$ .
  - d) Write merits of  $V_2O_5$  catalyst over a platinum catalyst in contact process.
  - e) Write any two properties of  $H_2SO_4$ .
  - f) List the raw materials required for manufacturing of Ammonia.
  - g) Write any two uses of hydrogen.
  - h) Name any four types of cements.
- B) Attempt **any two** : **8**
- a) Write any two properties and any two uses of caustic soda and chlorine.
  - b) Describe Linde's process for nitrogen and oxygen.
  - c) Explain dry process for manufacturing of cement.
2. Attempt **any two** : **16**
- a) Describe manufacturing process for nitric acid with flow diagram.
  - b) Explain electrothermal process for manufacture of phosphorous with flow diagram.
  - c) Explain manufacturing process for caustic soda and chlorine with flow diagram.
3. Attempt **any four** : **16**
- a) Distinguish between wet process and electric furnace process for manufacturing of phosphorous (any 4 points).
  - b) Explain how yellow phosphorous is converted into red phosphorus ?
  - c) Write raw materials and chemical reactions involve during manufacturing of single super phosphate.

**P.T.O.**



- d) Describe salt and sulphuric acid method for manufacturing of hydrochloric acid.
- e) Describe electrolytic process for soda ash.
- f) Write raw material and chemical reactions involve during manufacture of sodium carbonate.

**4. Attempt any four: 16**

- a) Explain manufacturing process for triple super phosphate.
- b) Explain manufacturing process for  $\text{PCl}_3$  and  $\text{PCl}_5$  with a neat block diagram.
- c) Describe synthesis process for manufacturing of HCl.
- d) Draw flow diagram of Solvay's process for soda ash.
- e) Describe manufacturing process for watergas.
- f) Explain manufacturing process for acetylene from calcium carbide.

**5. Attempt any two: 16**

- a) Explain manufacturing process of urea by MONTE-CATINI process with flow diagram.
- b) Explain manufacturing process for  $\text{H}_2$  from natural gas with flow diagram.
- c) Explain manufacturing process of ammonia from  $\text{N}_2$  and  $\text{H}_2$  with flow diagram.

**6. Attempt any four: 16**

- a) Write any four advantages of Solvay's process for soda ash.
  - b) Describe wet process for manufacturing of cement.
  - c) Explain manufacturing process of  $\text{CO}_2$  by flue gases.
  - d) Describe Stengel process for manufacturing of Ammonium nitrate.
  - e) Explain wet process for manufacture of phosphoric acid.
  - f) Describe manufacturing process for ammonium phosphate.
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