

22314

24225

3 Hours / 70 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.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

**5 × 2 = 10**

- (a) List disadvantages of biurate in manufacturing of urea.
- (b) Enlist raw material for the manufacturing of nitric acid.
- (c) State the industrial uses of ammonia.
- (d) Define red & yellow phosphorous.
- (e) List the industrial applications of soda ash.
- (f) Define calcination for cement process.
- (g) Name the principle in the manufacturing of oxygen & nitrogen.

**2. Attempt any THREE of the following :**

**3 × 4 = 12**

- (a) Outline the importance of mixed fertilizer in agriculture sector.
- (b) Compare single and triple superphosphate with respect to raw material and uses.



- (c) Explain the manufacturing process of Ammonium sulfate with chemical reaction involved.
- (d) Draw the process flow diagram for manufacturing of HCl.

**3. Attempt any THREE of the following :**

**3 × 4 = 12**

- (a) Explain manufacturing process of Ammonia.
- (b) Draw the process flow diagram for manufacturing of Nitric acid.
- (c) Explain manufacturing of water gas with raw material and flow diagram.
- (d) Classify the cement on the basis of constituents.

**4. Attempt any THREE of the following :**

**3 × 4 = 12**

- (a) Describe unit operation and unit process involved in manufacturing of phosphoric acid.
- (b) Explain manufacturing of carbon dioxide from flue gases.
- (c) Summarises the properties of good refractoriness.
- (d) Draw labelled diagram of Mercury cell.
- (e) Explain pollution control method used in manufacturing of superphosphate.

**5. Attempt any TWO of the following :**

**2 × 6 = 12**

- (a) Describe the manufacturing of urea with raw material, reactions and process flow diagram.
- (b) Identify and explain the manufacturing the phosphorous required for match box sticks.
- (c) Describe manufacturing of phosphoric acid with raw materials, reaction and flow diagram.

**6. Attempt any TWO of the following :**

**2 × 6 = 12**

- (a) Apply the principle of DCDA in manufacturing of sulfuring acid with flow diagram.
  - (b) Describe the manufacturing process of acetylene from calcium carbide.
  - (c) Select brine as a raw material for manufacturing of soda ash.
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