



# 17314

16117

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All questions are **compulsory**.
  - (2) Answer **each** next main question on a **new** page.
  - (3) Illustrate your answers with **neat** sketches **wherever** necessary.
  - (4) Figures to the **right** indicate **full** marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.

**Marks**

1. A) Answer **any six** : **(6×2=12)**
- a) State raw materials used for manufacturing of sulphuric acid. State its two uses.
  - b) Write reactions involved in manufacturing of sulphuric acid.
  - c) Give reason as to why sulphur trioxide is not absorbed in water for production of sulphuric acid.
  - d) State any two advantages of contact process.
  - e) Name the material of construction used for sulphuric acid process. Give reason.
  - f) State Le Chatelier's principle.
  - g) Name four types of cement.
  - h) Write two properties each of i) chlorine ii) sodium hydroxide.
- B) Answer **any two** : **(2×4=8)**
- a) Draw a labelled diagram of diaphragm cell.
  - b) Outline production of acetylene with a flow diagram.
  - c) Explain hardening and setting of cement.
2. Answer **any two** : **(2×8=16)**
- a) Explain manufacturing process of nitric acid with its flow diagram.
  - b) Explain manufacturing process of phosphoric acid with its flow diagram.
  - c) Draw a labelled new diagram of mercury cell. Write cell reactions.
3. Answer **any four** : **(4×4=16)**
- a) Describe manufacturing of yellow phosphorous.
  - b) Explain working of travelling pan filter in manufacturing of phosphoric acid.

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- c) Explain manufacturing of phosphorus pentachloride.
- d) Explain manufacturing of hydrochloric acid by salt and acid process.
- e) State four uses of soda ash. Write reactions involved in carbonation tower.
- f) Explain functions of ammonisation and carbonating tower in manufacturing of soda ash.

**4. Answer any four :** **(4×4=16)**

- a) Draw process flow diagram of manufacturing of soda ash.
- b) Explain pollution control aspects in manufacturing of single super phosphate.
- c) Define plaster of paris. Explain any two uses of plaster of paris.
- d) Differentiate between yellow and red phosphorus.
- e) Explain principle of Linde's and Claude's process.
- f) State four properties of hydrogen gas. State its four uses.

**5. Answer any two :** **(2×8=16)**

- a) Explain with reactions, manufacturing process of ammonia. Draw its flow diagram.
- b)
  - i) Write typical composition of water gas and producer gas.
  - ii) Draw block diagram of water gas manufacture.
  - iii) Explain uses of producer gas.
- c)
  - i) Describe with the help of reactions manufacturing process for urea.
  - ii) Name a resin manufactured from urea. Where is the resin used ?

**6. Answer any four :** **(4×4=16)**

- a) Describe manufacturing of oxygen by Linde's process.
  - b) Compare wet-and dry-process for cement manufacture.
  - c) Explain with reaction manufacturing process for ammonium phosphate.
  - d)
    - i) Define 1) dry ice 2) flue gases.
    - ii) Draw block diagram of manufacture of carbon dioxide.
  - e) Compare between triple and single super phosphate on the basis of raw materials, uses, reaction and process.
  - f) Define mixed fertilizer. Explain its importance.
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