



RN-8041

B. E. - II (Sem. III) (Chemical) Examination

May / June - 2010

Chemical Process Industries - I

(As per GTU)

Time : 3 Hours]

[Total Marks : 100

**Instructions :**

(1)

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|--|----------------------|
| नीचे दृशविले निशानीवाणी विगतो उत्तरवही पर अवश्य लखवी.<br>Fillup strictly the details of signs on your answer book.                             | Seat No. :           |
| Name of the Examination :  | <input type="text"/> |
| <input type="checkbox"/> B. E. - 2 (Sem. 3) (Chemical)   | <input type="text"/> |
| Name of the Subject :  | <input type="text"/> |
| <input type="checkbox"/> Chemical Process Industries - I   | <input type="text"/> |
| Subject Code No. : <input type="text" value="8"/> <input type="text" value="0"/> <input type="text" value="4"/> <input type="text" value="1"/> | <input type="text"/> |
| Section No. (1, 2,.....) : <input type="text" value="1&amp;2"/>  |                      |
| Student's Signature  |                      |

- (2) Attempt **all** the questions.
- (3) Attempt both the sections in **separate** answer sheets.
- (4) Figures to the right indicate full marks.
- (5) Draw a neat sketch whenever necessary.

**SECTION - I**

- 1 (a) Attempt the following : 10
- Q. (i) to (vi) carries one mark each.
- (i) What is SDVB with respect to ion exchange process?
  - (ii) What is Biuvet?
  - (iii) What is oleum?
  - (iv) Which membrane material would you prefer for treatment of Brackish water and sea water using R.O. respectively?
  - (v) Enlist manufacturing process for phosphoric acid.
  - (vi) Which promoters are used to enhance activity of  $V_2O_5$  catalyst?

(vii) What is eutrophication?

(viii) What are the raw material sources for sulphuric acid production?

(b) What is difference between STP and ETP with respect to wastewater treatment? Discuss in detail municipal waste water treatment plant with neat sketch showing individual units. **10**

**2** Attempt the following : (any two) **8×2=16**

(a) Discuss in detail hot and cold lime soda process for water softening.

(b) Discuss in detail major engineering problems involved in sulphuric acid production.

(c) Describe in detail montecatini solution recycle process for urea production with flow diagram.

**3** Attempt the following : (any two) **7×2=14**

(a) (i) Define fertilizer. Write in brief about NPK fertilizer.

(ii) Write a short note on Ammonia converter.

(b) Discuss in detail soda ash production with sketch.

(c) Enlist different types of electrolytic cell and explain membrane cell in detail.

## SECTION - II

**4** (a) Attempt the following : **10**

(Q. (i) to (vi) carries one mark each)

(i) Liquid sulphur dioxide boils at \_\_\_\_\_°C.

(ii) Write chemical equation for manufacturing of Nitrous oxide.

(iii) The specific surface ranges for activated carbon is \_\_\_\_\_ to \_\_\_\_\_ m<sup>2</sup>/g.

(iv) \_\_\_\_\_ is most widely used industrial diamond stone.

(v) Define pulp.

- (vi) Define glass.
- (vii) Give classification of chemical explosives.
- (viii) Define calorific value.
- (ix) Differentiate NCV and GCV.

(b) Write about raw materials for paper production. Draw neat flow diagram of paper manufacturing and discuss it.

**5** Attempt the following : (any two) **8×2=16**

- (a) Discuss in detail production of hydrazine by ammonia sodium hypochlorite process.
- (b) Write in detail regarding photoprocessing chemicals used in black and white photographs.
- (c) Describe in detail with neat sketch Sachsse process for acetylene manufacturing with neat sketch.

**6** Attempt any two : **7×2=14**

- (a) Discuss steps involved in manufacturing of refractories.
- (b) What is portland cement? Discuss in detail portland cement manufacturing.
- (c) Write short note on :
  - (i) Raw materials for glass manufacture
  - (ii) Safety glass.

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