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RM-7639

B. E. - IV (Sem. VIII) (Chemical) Examination

May / June – 2010

Fertilizer Technology

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :
B. E. - 4 (Sem. 8) (Chemical)

Name of the Subject :
Fertilizer Technology

Subject Code No. : **7 6 3 9** Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Answer to each section must be written in **separate** answer book.
(3) Figures to the **right** indicate full marks.
(4) All notations carry their usual meaning and draw labelled flowsheet wherever required.

SECTION - I

1 (a) Answer the following : **5×2=10**

(i) Enlist different technologies used for manufacturing ammonia.

(ii) Write the ratio's of NH_3 : CO_2 taken for urea manufacturing by Snamprogetti and Stamicarbon process. Justify your answer.

(iii) How NH_3 leakage could be ditected?

(iv) What is hydrogen embrittlement? and how can it be prevented?

(v) Define Bioinnoculants with examples.

(b) Draw neat flowsheet of Kellogg's process for ammonia manufacturing and explain absorption and stripping in detail. 8

2 Answer any **two** of the following : **8×2=16**

(i) Discuss the factors affecting urea production by Snamprogetti process in detail.

(ii) Explain Stamicarbon process of urea production with the help of neat and labelled flow diagram, chemical reactions and operating parameters.

(iii) Classify the Biofertilizers? Give its advantages over chemical fertilizers and explain nitrogen fixation in detail.

3 Answer any **four** of the following : **4×4=16**

(i) Draw and explain Kellogg's Horizontal convertor.

(ii) Differentiate between Kellogg's process and linde process for ammonia production.

(iii) Give significance of L.T. section and H.T. section for shift conversion in ammonia production.

(iv) Discuss the role of macronutrients and micronutrients in plants.

(v) Discuss the comparative features of evaporation and crystallization techniques in urea production.

SECTION - II

4 (a) Answer the following : **5×2=10**

(i) Write importance of DAP.

(ii) Remelting pig iron in _____ furnace produces wrought iron while cast iron is obtained by remelting pig iron with coke and limestone in _____ furnace.

(iii) Write objectives of instrumentation and control.

(iv) What is function of CMS in pressure swing absorption process (PSA)?

(v) Which chemicals are used to control acidity in boiler feed water?

(b) What is EIA? Explain procedure of NOC and Industrial license. 8

5 Answer the following any **two**) **8×2=16**

(i) Explain manufacturing of superphosphate and Tripple Superphosphate with its chemical reactions and flowsheet.

(ii) Explain DCS in detail. Write all main components.

(iii) Explain manufacture of HNO_3 and write its major Engineering problems.

6 Answer the following (any **four**) **4×4=16**

(i) Discuss Environmental issues of Fertilizer industry.

(ii) Explain sources and control of NO_x emission.

(iii) Explain microbiological problems encountered in cooling towers briefly.

(iv) Discuss major engineering problems in manufacturing of H_2SO_4 in DCDA process.

(v) Define corrosion. Enlist the types of corrosion.
