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RN-6721

B. E. III (Sem. V) (Chem.) Examination

May / June – 2010

General Chemical Technology - I

Time : 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. 3 (Sem. 5) (Chem.)**

Name of the Subject :

☛ **General Chemical Technology - 1**

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

Seat No. :

Student's Signature

(2) Answer each section **separately**.

(3) Figures to the right indicate full marks.

(4) Draw neat, labelled flow diagrams along with all the necessary chemical reaction wherever required.

SECTION - I

1 Attempt the following : **10**

(a) Fill in the blanks :

(i) The catalyst used in the manufacture of sulfuric acid by contact process is _____.

(ii) 65% Oleum is prepared by distilling _____% oleum.

(iii) The constituents of water gas are _____ and _____.

(iv) Diaphragm electrolysis cell produces _____% NaOH solution.

(v) The principal raw material for the production of chlorine gas by mercury electrolytic cell is _____ with _____.

(vi) The chemical name of bleaching powder is _____.

(vii) Glass industry required soda ash with _____ and _____.

(viii) High alumina cement is manufactured by fusing _____ and _____.

(ix) The catalyst used in the manufacture of nitric acid by ammonia oxidation process is _____.

(x) Urea is formed in a low-stripping operation by dehydradation of _____.

(b) Describe the non-conventional sources of energy. 8

2 Attempt any **two** : 16

(a) Discuss in detail the manufacture of soda ash by solvay process and also discuss the advantages and disadvantages of this process.

(b) Explain waste water treatment by activated sludge process. Discuss treated effluent disposal management.

(c) Describe mining of sulfur by frasch process.

3 Attempt any **two** : 16

(a) Explain with a flowsheet any one method of recovery and treatment of natural gas and LPG.

(b) What are phosphatic fertilizers? Discuss any one in detail.

(c) What is cooking of coal? Describe fraction distillation of coal.

SECTION - II

4 (a) Attempt the following : 18

(i) Mention the two most prominent types of detergent widely used today. 1

(ii) TMP with respect to pulping stands for _____. 1

(iii) Hydrated salt of magnesium sulfate is also known as _____. 1

(iv) Write the chemical reactions involved in chemical recovery from block liquor during sulfate (Kraft) pulp process. 2

(v) Enlist uses of molasses. 2

(vi) During starch production from maize _____ is used in steep tank as Bacteriostatic. 1

(vii) Enlist most widely used solvents for the extraction of vegetable oils. 1

(viii) Define the term biodegradability with respect to surfactant. 1

(b) Explain in detail major engineering problems involved in production of sugar manufacturing. 8

5 Attempt the following : (any **two**) **16**

(a) Explain in detail hydrogenation of vegetable oil.

(b) Discuss various starch derivatives with their chemical structures.

(c) Draw a neat flow diagram of paper manufacturing from pulp stock.

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

(a) Write a short note : Additives for detergent.

(b) Draw only a neat flow diagram for production of dextrine.

(c) Enlist the major engineering problems associated with hydrogenation of vegetable oil and explain any one of them.

(d) Write a short notes on speciality papers.

(e) List advantages and disadvantages of continuous counter current process for fatty acid and soap production.