Exam.Code:0003
Sub. Code: 0277

1128
B.A./B.Sc. (General) Third Semester
Industrial Chemistry
Paper -A: Material Science

Time allowed: 3 Hours **Max. Marks: 75**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit

x-x-x

I. Write brief note on following:-

a) What is engineering stress and strain?

b) What is shear stress and strain ?

c) What Is an alloy and what are Its uses?

d) What are the reagents used for halogenation of organic compounds?

e) What are the reagents used for hydrolysis of organic compounds?

f) What are the commonly used catalysts for hydrogenation reactions?

g) What are the common alkylating agents?

h) What is mercerization?

i) What are the main constituents of plastics?

j) What is the composition of Portland cement? (10x1½)

UNIT – I

II. a) What are Ceramics and how are they classified?

b) What are the raw materials used for manufacture of ceramics?

c) Discuss the applications of ceramics. (3x5)

III. a) Define hardness. What is Mohs scale of hardness?

b) What is ultimate tensile strength? How can we measure the ultimate tensile strength of a given material? (5,10)

UNIT – II

IV. a) What reagent is used in the nitration of benzene?

b) What is the mechanism of nitration?

c) Is ortho or para the major product? (3x5)

P.T.O.

V. a) Discuss the mechanism of halogenations of alkanes.

b) With the help of a well labelled flow sheet show the various steps involved in the manufacture of monochlorobenzene. (5,10)

UNIT - III

VI. a) Which functional groups can be oxidized?

b) Which are the commonly used oxidizing agents for organic compounds?

c) Write a note on Liquid phase oxidation of organic compounds. (3x5)

VII. a) Discuss Mechanism of acid hydrolysis of esters.

b) Commercial manufacture of Maleic anhydride. (7,8)

UNIT – IV

VIII. a) Synthesis of methanol from carbon monoxide and hydrogen.

b) Discuss hydrogenation of vegetable oils. (7,8)

IX. a) Manufacture of alkyl benzene sulphonate.

b) Mechanism of Fridel Crafts alkylation of benzene. (7,8)

x-x-x