B.Sc/2110

10355/NH

C7-CHEMISTRY-3 -CODE: BHB14

10355/NH

TIME: THREE HOURS **MAXIMUM MARKS: 74**

Note: The question paper consists of three sections A, B and C. Attempt five questions in all, selecting two questions each from Section A and B and the entire Section C.

SECTION-A

I. How will you prepare phenol from Grignard reagent, Aromatic sulphonic acids and Dizonium salts? 11

II. What is an aldol condensation? Discuss the mechanism of acid and base catalyzed aldol condensation reactions? Illustrate your answers with examples? 11

III. What are alcohols and their classification? Discuss two methods by which primary, secondary and tertiary alcohols can be distinguished? 11

IV. Discuss briefly the effect of electron donating and electron withdrawing substituents on the acidity of aromatic acids? 11

SECTION-B

V. What is entropy? Derive an expression for the calculation of the entropy change of an ideal gas when temperature and volume changes? 11

VI. a) Explain Nernst heat theorem? 8

b)What are Gibbs function and Helmholtz functions? 3

VII. Derive an expression for ΔV and ΔH for adiabatic reversible expansion of an ideal gas? 11

VIII. a) What is second law of thermodynamics? 3

b) Explain the criteria for spontaneity of a process? 8

SECTION-C

IX. Write a note on the following:

a) First and Second law of the thermodynamics
b) Cannizaro reaction
c) Give IUPAC name of CH_3COOH, CH_3CHO and $CH_3CH{=}CHCHO$
d) Give equations to convert: phenol to benzene and phenol to phenolphthalein
e) Name any two thermodynamic intensive properties
f) Criteria for spontaneity of a process
g) Entropy
h) Heat and work
i) Joule's law
j) Acidity of carboxylic acids
k) Gibbs free energy
l) Kolbe's reaction
m) Fries rearrangement
n) What is cumene
o) Heat capacity (15x2)