Progressive Education Society's

Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16, NEP 2020 (Autonomous)

End Semester Examination: OCT / NOV 2024

***Total No. of Questions**: 4/18* ***Total No. of Pages**: 2*

SECOND YEAR (B. Sc. Blended)

CHM301: Chemistry: Reactions and Synthesis

(Semester III)

Program: B. Sc. Blended **Credits: 2**
Program Specific: S. Y. B. Sc. (Blended) **Time: 2 Hours**
Course Type: Core **Max. Marks: 30**
Paper: **SET: A**

Instructions to the candidate:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Draw a well labelled diagram wherever necessary.*

SECTION: A

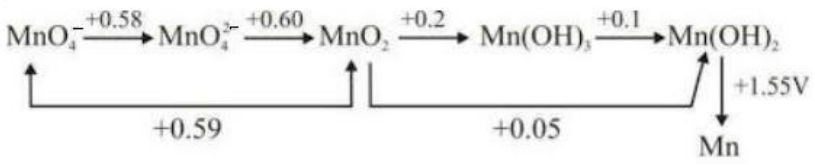
Q1) Define the following **[5 X 1= 5M]**

1. Colligative property
2. Electrides and sodides
3. Enols and Enolates
4. Retrosynthesis
5. Thermodynamics

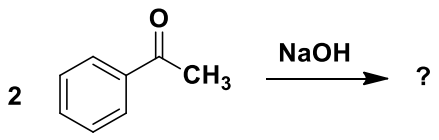
SECTION: B

Q2) Answer the following (Attempt any <u>FIVE</u>) **[5 X 2 =10M]**

1. Explain inner and outer-sphere reactions.
2. Calculate the kinetic energy of an ideal gas at 310K.
3. Explain Ellingham diagram with suitable example.
4. Explain trans effect.
5. Identify and explain the following diagram



6. Predict the product for the following reaction



P.T.O.

7. 

SECTION: C

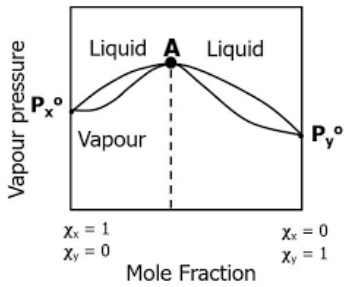
Q3) Answer the following (Attempt any <u>TWO</u>) [2 X 5 = 10M]

1. Explain inert and labile complexes.
2. Explain Aldol condensation. Predict all the products of reaction between Acetaldehyde and propionaldehyde in presence of NaOH.
3. Calculate the Gibbs free energy of mixing where 8 grams of nitrogen, 64 grams of oxygen and 12 grams of carbon dioxide are mixed at 300K. (R= 8.314 J/mol/K).
   Atomic weight of C is 12.
   Atomic weight of O is 16.
   Atomic weight of N is 14.
4. Explain Michael addition reaction with two different electrophiles.

SECTION: D

Q4) Answer the following (Attempt any <u>ONE</u>) [1 X 5 = 5M]

1. Write a short note on Grignard reagent.
2. Explain the given vapor pressure diagram. What is point A?



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