SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
B.Sc. END SEMESTER EXAMINATIONS NOVEMBER-2022
SEMESTER - III
20UCHCT3005 - General Chemistry - V

Total Duration : 2 Hrs 30 Mins. **Total Marks : 60**

Section A

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. i. Explain the order of reactivity of 1°,2°,3° alcohols.
   ii. Identify the product obtained in Lerder Mannasse reaction. Write the equation.
2. i.State Trouton's rule.
   ii.Boiling point of n-heptane is 36°C. Calculate its molar heat of vaporisation assuming that it obeys Trouton's rule.
3. Describe the entropy changes accompanied in a reversible and irreversible process.
4. Explain the variation of the chemical potential with temperature and pressure.
5. Explain the determination of fugacity of a gas at low pressures.
6. Relate the structure of
   i. Boron nitride and Graphite.
   ii. Borazole and Benzene.
7. Illustrate the various heat treatment process of steel and their important applications.
8. Appraise the method of Zone refining in metallurgy.

Section B

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Expalin the following
   i. Bouvaelt-Blanc reduction.
   ii. Riemer-Tiemann reaction.
   iii. Mechanism of sulphonation of phenols.
   iv. Acidic character of phenols.
   v. Williamson's ether synthesis.
10. "It is impossible to convert heat into work without compensation." Justify this statement with the help of Carnot cycle.

Contd...

11. i. Derive the Gibbs Helmholtz equation
    ii. Compute the change in enthalpy (ΔH) for the process at 30°C. If the free energy change accompanying the given process is -85.77 KJ at 25°C and -83.68 KJ at 35°C.

12. i. Explain the classification of silicates with an example for each
    ii. Discuss the preparation and properties of LiAlH$_4$.

13. Discuss the occurrence, extraction and chemical properties of Titanium.

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