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GA—18—2023

FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. (First Semester) EXAMINATION

APRIL/MAY, 2023

(CBCS/New Course)

CHEMISTRY

Paper-II

(Physical and Inorganic Chemistry)

(Wednesday, 26-4-2023)

Time : 10.00 a.m. to 12.00 noon

Time— Two Hours

Maximum Marks—40

N.B. :— (i) Attempt *All* questions.

(ii) Use of calculator and logarithmic table is allowed.

1. Solve any *three* of the following : 15
 - (a) Discuss the oxides of group IA and II-A in brief.
 - (b) (i) Explain the points of difference between Li and other alkali metals.
(ii) Write a note on complex of calcium with EDTA.
 - (c) Explain basic strength of hydroxides of alkali and alkaline earth metals.
 - (d) Define Oxidation, Reduction, Oxidizing agent and Reducing agent according to classical concept.
 - (e) Explain balancing of redox reaction by Oxidation number method.
2. Solve any *three* of the following : 15
 - (a) Derive van der Waals' equation.
 - (b) State and explain 'Combination'. Evaluate the value of 6C_2 .

P.T.O.

- (c) What is adsorption isotherm ? Explain Langmuir adsorption isotherm.
- (d) Explain the determination of Crystal structure of Sodium Chloride (NaCl) by X-ray diffraction method.
- (e) Define 'Critical temperature'. Calculate the Root mean square velocity of N_2 molecule at $27^\circ C$. (Given : $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$).
3. Solve any *two* of the following : 10
- (a) Define 'Unit Cell'. Discuss various types of elements of symmetry.
- (b) Discuss the factors affecting adsorption.
- (c) Explain the deviation of gases from ideal behaviour.
- (d) What is S.I. Unit of 'Pressure' and 'Density' ? Calculate the pH of 0.036 M HCl solution.