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SB—41—2022

FACULTY OF SCIENCE

B.Sc. (Second Year) (Fourth Semester) EXAMINATION

MAY/JUNE, 2022

(Old Course)

CHEMISTRY

Paper-IX

(Physical and Inorganic Chemistry)

(Friday, 10-06-2022) **Time : 2.00 p.m. to 4.30 p.m.**

Time— 2.½ Hours *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Use of logarithmic table and non-programmable calculator is allowed.

1. Solve any *three* of the following : 15

(*i*) What are zeolites. Give preparation and its applications.

(*ii*) Write a note on Fullerene.

(*iii*) What are fluorocarbons ? Give its classification.

(*iv*) Explain the preparation, structure and uses of Cl_2O.

(*v*) Describe any *two* methods of preparation Brf_5. Explain its structure.

2. Solve any *three* of the following : 15

(*i*) Explain briefly the collision theory of reaction rates. What are its limitations.

(*ii*) What is zero order reaction ? Explain the rate constant of zero order reaction.

(*iii*) Explain Arrhenius theory of electrolytic dissociation and give its limitations.

P.T.O.

(*iv*) Explain how is Kohlrausch law helpful in determining.

(*a*) Ionic product of water

(*b*) Degree of dissociation.

(*v*) What is Quantum Yield ? How can it be experimentally determined ?

3. Solve any *two* of the following : 2×5=10

(*i*) (*a*) Write a note on effect of temperature on reaction rate.

(*b*) The rate constant for a first order reaction is $1.54 \times 10^{-3} s^{-1}$. Calculate its halflife period.

(*ii*) Explain Debye-Huckers theory of strong electrolyte.

(*iii*) State the principle of conductometric titrations. Discuss the titration curve obtained from.

(*a*) Strong acid *Vs* strong base

(*b*) Strong acid *Vs* weak base.

(*iv*) Draw and discuss Jablonski diagram.