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PA-23-2024

FACULTY OF SCIENCE

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

APRIL/MAY, 2024

(New Course)

CHEMISTRY

Paper-IX

(Physical and Inorganic Chemistry)

(Friday, 12-04-2024)

Time : 2.00 p.m. to 4.00 p.m.

Time—2 Hours

Maximum Marks—40

N.B. :— (i) Attempt all questions.

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

1. Solve any three of the following :

15

- (a) What are interhalogen compounds ? Explain structure of XY_3 type of interhalogen compound.
- (b) Write any two properties of ICl_2^- ion and explain its structure.
- (c) Define oxyacids of halogen. Explain its classification.

P.T.O.

X213Y231D923X213Y83D923X213Y83D923X213Y83D923

(d) Write a note on pyrosilicate and orthosilicate.

(e) Explain briefly metallic carbide.

2. Solve any *three* of the following :

15

(a) Derive equation for rate constant of first order chemical reaction. Show that the half-life period of first order reaction is independent of initial concentration of reaction.

(b) For the first order reaction the half-life period is 20 minutes. What is the time taken for 75% of the completion of the reaction ?

(c) Explain Arrhenius theory of electrolytic dissociation and give its any *two* limitations.

(d) State Kohlrausch's law and explain its any *two* applications.

(e) State and explain Grotthus-Draper law and Stark-Einstein law of photochemical equivalence.

3. Solve any *two* of the following :

10

(a) Explain different factors affect the rate of chemical reaction.

- (b) 0.4 N solution of salt placed between platinum electrodes 16 cm apart having 4 cm^2 cross-sectional area has shown the 20 ohm resistance. Find equivalent conductance of the solution.
- (c) Explain the conductometric titration of strong acid against strong base.
- (d) Explain the phenomenon of fluorescence and phosphorescence with Jablonski diagram.