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PA—19—2024

FACULTY OF SCIENCE

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

MARCH/APRIL, 2024

(CBCS/New Pattern)

CHEMISTRY

Paper–VII

(Physical and Inorganic Chemistry)

(Wednesday, 10-04-2024) **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 *Hours* *Maximum Marks*—40

N.B. :— (*i*) Attempt *all* questions

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

1. Attempt any *three* of the following :

(*a*) Define radioactivity ? Explain the characteristics of β-particles.

(*b*) Define the following terms :

(*i*) Isotope

(*ii*) Isomer

(*iii*) Isotones

(*iv*) Isobar

(*v*) Nuclear fission.

P.T.O.

(*c*) Write application of radioisotopes in medicine and agricultural field.

(*d*) Explain the following steps involved in gravimetric analysis :

(*i*) Drying

(*ii*) Ignition

(*iii*) Weighing

(*e*) Explain any *two* factors affecting on precipitation.

2. Solve any *three* of the following :

(*a*) State Heisenberg's uncertainty principle

[Calculate de-Broglie's wavelength of a body of mass 0.1 kg. moving with velocity 1000 m sec^{-1}]

(*b*) Explain Davisson-Germer experiment.

(*c*) State Joule's law and explain Joule–Thomson effect.

(*d*) Write the physical significance of entropy.

(*e*) Explain water system with phase diagram.

3. Solve any *two* of the following :

(*a*) Derive Schrodinger's wave equation. Write down the physical significance of ψ and ψ^2.

(*b*) State third law of thermodynamics. Write any *three* statements of second law of thermodynamics.

Or

(*a*) Discuss entropy change in fusion of solid.

(*b*) Transition from one crystalline form to another.

(*c*) Describe phenol-water system on the basis of phase rule.