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VA—20—2024

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2024

(New Course)

CHEMISTRY

Paper–IV

(Physical and Inorganic Chemistry)

(Wednesday, 4-12-2024) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

(*ii*) Use of logarithmic table is allowed.

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

(*a*) Define ionic bond. Explain various factors affecting on ionic bonding.

(*b*) How will you determine ionic character in covalent bond from dipole moment in detail ?

(*c*) Explain different types of van der Waals forces with examples.

(*d*) Define and explain sp^3d^2 hybridization with suitable example.

(*e*) Draw molecular orbital diagram of hydrogen and nitrogen and calculate its bond order.

P.T.O.

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

(*a*) What are sols ? Explain the kinetic properties of sols.

(*b*) Give the characteristics of catalytic reactions.

(*c*) Derive an expression for radius of *n*th Bohr's orbit of Hydrogen atom.

(*d*) Describe the various intermolecular forces in liquids.

(*e*) (*i*) Write a note on acid-base catalysis.

(*ii*) Give an account of Pauli's exclusion principle.

3. Solve any *two* of the following : 10

(*a*) What are promoters ? Explain its promotion action.

(*b*) Explain the applications of colloids.

(*c*) Define surface tension. Explain the effect of temperature on surface tension.

(*d*) State the postulates of Bohr's atomic theory of Hydrogen atom. Give its demerits.