

First Semester B.Sc. Degree Examination, November 2018

First Degree Programme under CBCSS

Branch : CHEMISTRY

CH 1141 : Inorganic Chemistry – I

(2017 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

(Answer **all** questions in **one** word/**one** sentence. **Each** question carries **1** mark)

1. Write the Schrodinger wave equation.
2. Why K^+ ion has smaller size than K atom ?
3. Which pollutants cause classical smog ?
4. What is meant by nascent hydrogen ?
5. Define lattice enthalpy.
6. Explain the Lewis concept of acids and bases.
7. What is acid rain ?
8. How do fertilizers cause soil pollution ?
9. What is smog ?
10. What is meant by reverse osmosis ?

(1×10=10 Marks)

P.T.O.



SECTION - B

Answer **any 8** questions. **Each** question carries **2** marks.

11. Calculate the de Broglie wavelength of an electron moving with a velocity of $10 \times 10^8 \text{ cms}^{-1}$.
12. What are eigen value and eigen function ?
13. What is Portland cement ?
14. What are ortho and para hydrogen ?
15. What is meant by wave function ? What is its significance ?
16. Why ionisation energy of nitrogen is higher than oxygen ?
17. What is diagonal relationship ? Give example.
18. Explain levelling solvent.
19. What is BOD and COD ? Give its significance.
20. What is meant by ozone hole ? How is it caused ?
21. Write notes on greenhouse effect.
22. What are hydrides ? How are they classified ?

(2×8=16 Marks)

SECTION - C

(Answer **any 6** questions. **Each** question carries **4** marks)

23. State the Heisenberg's uncertainty principle and indicate its significance.
24. Discuss the following reaction in liquid SO_2 a) solvation and b) acid-base reaction.
25. Explain with reason the diagonal relationship between Li and Mg.
26. Write one method for the preparation of calcium oxide, calcium hydroxide and calcium cyanamide.
27. Explain SHAB principle.



28. Differentiate between intermolecular and intramolecular hydrogen bonding. Give example for each one.
29. State the rules that govern the filling of electrons in orbitals.
30. How are ozone layer depleted ?
31. Write and explain any two factors that affect the quality of water. (4×6=24 Marks)

SECTION - D

Answer **any 2** questions. **Each** question carries **15** marks.

32. Write a note on liquid ammonia as a non-aqueous solvent.
33. a) What is hard water ? Discuss different methods of softening hard water.
b) Discuss the method of preparation and properties of heavy water.
34. a) Compare the solubility products of hydroxide and sulphate of alkaline earth metals.
b) What is electronegativity ? How is electronegativity obtained by the Pauling's method ?
35. a) Discuss the mechanism of formation of photochemical smog.
b) In what way, CO₂ causes air pollution ? (2×15=30 Marks)