KALYANI MAHAVIDYALAYA.

Chemistry

Paper I

1. Calculate the first Bohr radius of He^+ ion, given that the first Bohr radius of H-atom is $0.529A^0$.
2. What is the wavelength of light emitted when the electron in a hydrogen atom undergoes transition from the energy level with n= 4 to n= 2? In which region of electromagnetic spectrum does the radiation fall?
3. Explain why- i)Chlorine has the highest electron affinity among halogens.
   ii) N has higher value of IP than O.
4. Write down the time independent Schrodinger wave equation explaining the meaning of each term. What are the characteristics of Ψ?
5. Calculate the Z_{eff} for an electron in the 4s orbital of a Cu atom.
6. Differentiate between Schottky defect and Frenkel defect.
7. The order of increase of basicity is as follows: BeO<MgO<CaO<BaO. Explain why?
8. What type of semiconductor is Ge? If Ge is doped with Ga what type of semiconductor is formed? Explain.
9. Draw schematic band models of alkali metals and alkaline earth metals to show their conductivity.
10. Draw the structure of NaCl crystal and find the percentage of space occupied by the ions in a unit cell.
11. What are acid-base indicators? Give two examples of this type and give their pH range.
12. $[CoF_6]^{3-}$ is a much more stable ion than $[CoI_6]^{3-}$. Explain why?
13. Ice has less density than water. Explain why?
14. Melting points of maleic acid and fumaric acid are 130^0C and 287^0C. Explain why?
15. What is Inorganic Benzene? Explain it's structure.

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Chemistry
Paper II

1. Define Raoult's Law and Henry's Law.
2. Define viscosity and its effect on temperature?
3. Discuss the effects on which surface tension depends.
4. Discuss the element of symmetry elements present in organic molecules..

5. Write down the short note on
   i) Tautomerism
   ii) SN^1 and SN^2 with suitable examples
   iii) E^1 and E^2 with suitable examples
   iv) Le Chatelier's principle.

6. Discuss the different synthetic route for the synthesis of alkyl halide and aryl halides
7. Draw the resonating structure of Nitro benzene and Phenol.
8. Newmann and Sawhorse Projection formulae of n- Butane.
9. Define enthalpy and internal energy with its unit.
10. What do you mean Carnot Cycle with is mathematical expression.
11. Discuss the effect of temperature, pressure inert gas and concentration?