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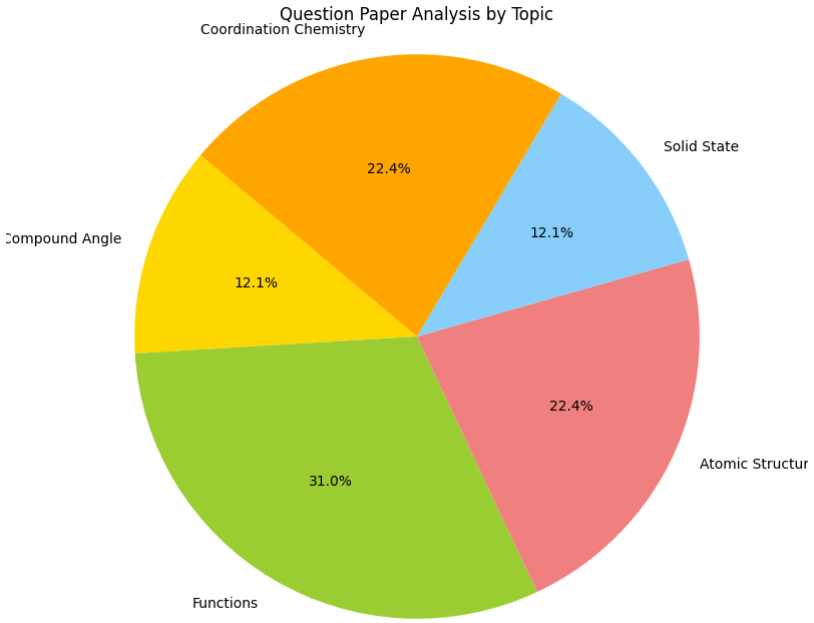
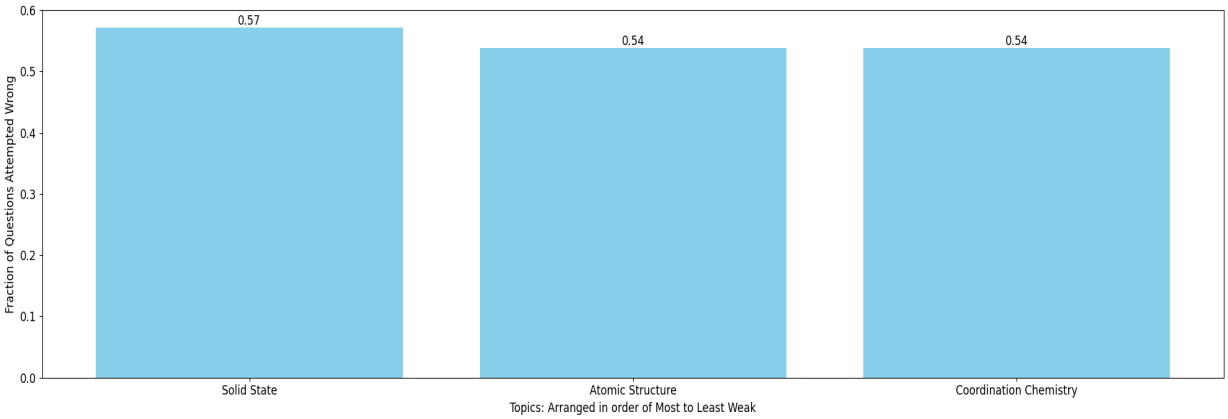
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Solid State:

1. In a solid AB. A atoms are in ccp arrangement and B atoms occupy all the octahedral sites. If two atoms from the opposite faces are removed, then the resultant stoichiometry of the compound is A_xB_y. The value of x is_____. [nearest integer] **[JEE Main, June 2022]**

24. A substance A_xB_y crystallises in a FCC lattice in which atoms "A" occupy each corner of the cube and atoms "B" occupy the centres of each face of the cube. Identify the correct composition of the substance A_xB_y. **[JEE-2002]**

(A) AB_3 (B) A_4B_3

(C) A_3B (D) composition cannot be specified

12. Which of the following statements is correct in the rock-salt structure of ionic compounds?

(A) coordination number of cation is four whereas that of anion is six.

(B) coordination number of cation is six whereas that of anion is four.

(C) coordination number of each cation and anion is four.

(D) coordination number of each cation and anion is six.

34. How many unit cells are there in 1 gram of NaCl

(A) $\frac{4 \times N_A}{}$ (B) $\frac{N_A}{}$ (C) $\frac{N_A}{}$ (D) $\frac{N_A}{}$

35. A compound XY crystallizes in 8 : 8 lattice with unit cell edge length of 480 pm. If the radius of Y^- is 225 pm, then the radius of X^+ is

(A) 127.5 pm (B) 190.68 pm (C) 225 pm (D) 255 pm

Atomic Structure:

9. The wavelength of the radiation emitted, when in a hydrogen atom electron falls from infinity to stationary state 1, would be (Rydberg constant = $1.097\times 10^{7}\ m^{-1}$) : **[AIEEE-2004]**

(1) 9.1×10^{-8} nm (2) 192 nm (3) 406 nm (4) 91 nm

40. If the de Broglie wavelength of the electron in nth Bohr orbit in a hydrogenic atom is equal to

13. If the potential energy (PE) of hydrogen electron is –3.02eV then in which of the following excited level is electron present :–

(A) 1^{st} (B) 2^{nd} (C) 3^{rd} (D) 4^{th}

47. What will be de-Broglie wavelength of an electron moving with a velocity of $1.2 \times 10^{5}\ ms^{-1}$:

(A) 6.068×10^{-9} m (B) 3.133×10^{-37} m (C) 6.626×10^{-9} m (D) 6.018×10^{-7} m

57. The magnetic moment of a transition metal compound has been calculated to be 3.87 B.M. The metal ion is **[JEE Main (April) 2023]**

(A) Cr^{2+} (B) Ti^{2+} (C) V^{2+} (D) Mn^{2+}

Ans. **C**

Coordination Chemistry:

8. The IUPAC name of A and B are

(A) Potassium tetracyanidonickelate (II), potassium tetrachloridonickelate (II)

(B) Tetracyanidopotassiumnickelate (II), teterachloridopotassiumnickelate (II)

(C) Tetracyanidornickel (II), tetrachloridonickel (II)

(D) Potassium tetracyanidonickel (II), potassium tetrachloridonickel (II)

4. Which of the following forms with an excess of CN^{-}, a complex having coordination number two ?

(A) Cu^{2+} (B) Ag^{+} (C) Ni^{2+} (D) Fe^{2+}

75. The complex that can show fac- and mer-isomers is : **[JEE MAIN 2020]**

(1) $[Co(NH_3)_4Cl_2]^+$ (2) $[Pt(NH_3)_2Cl_2]$

(3) $[Co(NH_3)_3(NO_2)_3]$ (4) $[CoCl_2(en)_2]$

29. The molar ionic conductances of the octahedral complexes.

(I) $PtCl_4 \cdot 5NH_3$ (II) $PtCl_4 \cdot 4NH_3$ (III) $PtCl_4 \cdot 3NH_3$ (IV) $PtCl_4 \cdot 2NH_3$

(A) I < II < III < IV (B) IV < III <II < I

(C) III < IV < II < I (D) IV < III < I < II

23. Which one of the following has an optical isomer ? **[AIEEE–2010]**

(1) $[Zn(en)_2]^{2+}$ (2) $[Zn(en)(NH_3)_2]^{2+}$ (3) $[Co(en)_3]^{3+}$ (4) $[Co(H_2O)_4(en)]^{3+}$

(en = ethylenediamine)