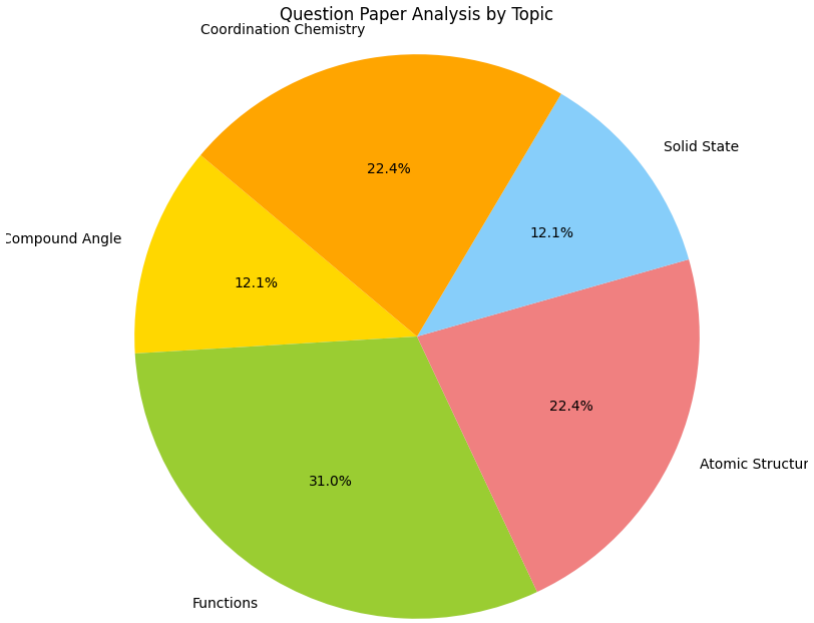
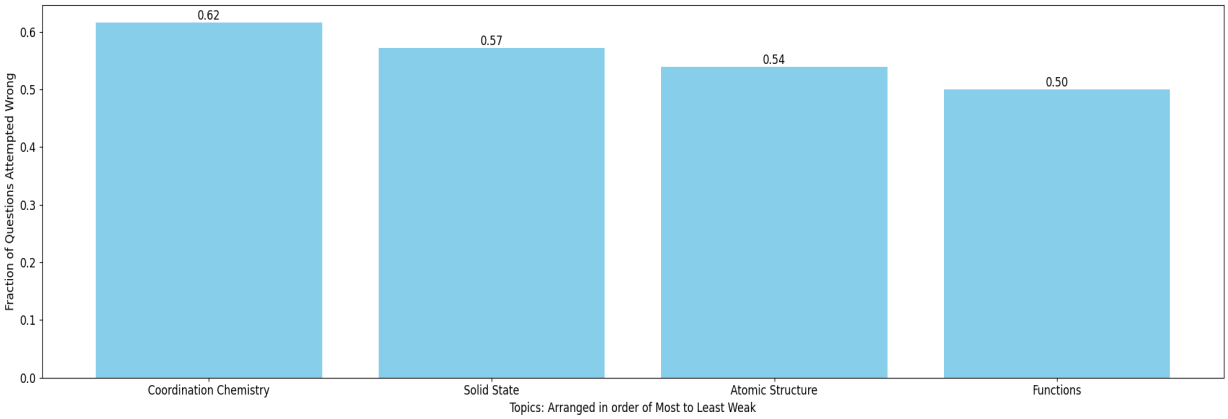
Piyush jha Total
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Coordination Chemistry:

28. Which among the following will be named as dibromidobis-(ethylenediamine)chromium(III) bromide ? **[AIEEE–2012]**

(1) $[Cr(en)Br_2]Br$ (2) $[Cr(en)_3]Br_3$ (3) $[Cr(en)_2Br_2]Br$ (4) $[Cr(en)Br_4]^-$

17. Which of the following is not considered as an organometallic compound ?

(A) Ferrocene (B) Cis-platin (C) Ziese's salt (D) Grignard reagent

2. The correct order of hybridisation of the central atom in the following species. **[JEE 2001]**

NH_3, $[PtCl_4]^{2-}$, PCl_5 and BCl_3 is [At No. Pt = 78]

(A) dsp^2,sp^3d,sp^2 and sp^3 (B) sp^3,dsp^2, sp^3d, sp^2

(C) dsp^2,sp^2,sp^3 and sp^3d (D) dsp^2, sp^3,sp^2 and sp^3d

80. The correct order of the spin-only magnetic moments of the following complexes is : **[JEE MAIN 2020]**

(I) $[Cr(H_2O)_6]Br_2$ (II) $Na_4[Fe(CN)_6]$

(III) $Na_3[Fe(C_2O_4)_3](\Delta_0 > P)$ (IV) $(Et_4N)_2[CoCl_4]$

(1) (III) > (I) > (II) > (IV) (2) (III) > (I) > (IV) > (II)

(3) (I) > (IV) > (III) > (II) (4) (II) ≈ (I) > (IV) > (III)

32. The pair(s) of coordination complex/ion exhibiting the same kind of isomerism is(are) – **[JEE 2013]**

(A) $[Cr(NH_3)_5Cl]Cl_2$ and $[Cr(NH_3)_4Cl_2]Cl$ (B) $[Co(NH_3)_4Cl_2]^+$ and $[Pt(NH_3)_2(H_2O)Cl]^+$

(C) $[CoBr_2Cl_2]^{2-}$ and $[PtBr_2Cl_2]^{2-}$ (D) $[Pt(NH_3)_3(NO_3)]$ Cl and $[Pt(NH_3)_3Cl]$ Br

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Solid State:

30. If NaCl is dopped with 10^{-3} mol % $SrCl_2$, what is the numbers of cation vacancies per mole of NaCl?

33. A solid has 'bcc' structure. If the distance of nearest approach between two atoms is

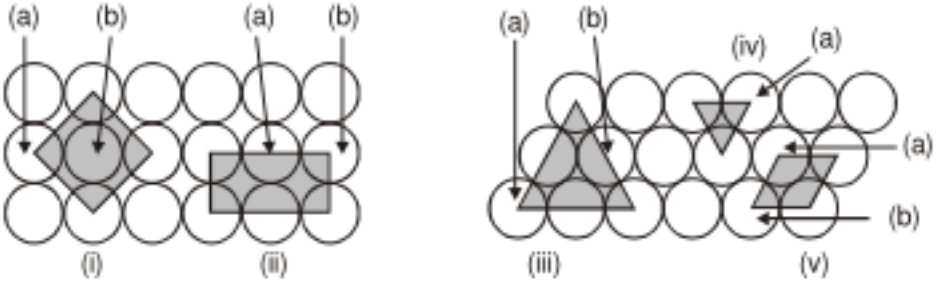
29. The composition of a sample of wustite is $Fe_{0.93}O_{1.0}$. What percentage of iron is present in the form of Fe(III)?

43. How many unit cells are present in a cube-shaped ideal crystal of NaCl of mass 1.00g ?

(A) 1.28×10^{21} unit cells (B) 1.71×10^{21} unit cells **[AIEEE-03]**

(C) 2.57×10^{21} unit cells (D) 5.14×10^{21} unit cells

4. Given below are two dimensions lattices with nicely shaded regions. You just have to find the contributions (in fractions) of particles marked to the shaded regions and the total number of particles in the regions.



Atomic Structure:

32. The value of $(n_2 + n_1)$ and $\left(n_2^2 - n_1^2\right)$ for He^+ ion in atomic spectrum are 4 and 8 respectively.

The wavelength of emitted photon when electron jump from n_2 to n_1 is

(A) $\frac{32}{9} R_H$ (B) $\frac{32}{9} R_H$ (C) $\frac{9}{32R_H}$ (D) $\frac{32}{9R_H}$

9. A photon of energy 12.75 ev is completely absorbed by a hydrogen atom initially in ground state. The principle quantum number of the excited state is

(A) 1 (B) 3 (C) 4 (D) ∞

11. According to Bohr's theory angular momentum of electron in 5th shell is : **[AIEEE-2006]**

(1) 1.0 h/π (2) 10 h/π (3) 2.5 h/π (4) 25 h/π

14. Choose the correct statement among the following

(A) Radial distribution function ($\Psi^2 \cdot 4\pi r^2 dr$) give probability at a particular distance along one chosen direction

(B) Ψ^2 (r) give probability density at a particular distance over a spherical surface

(C) For 's' orbitals $\Psi(r)\Psi(\theta)\Psi(\phi) = \Psi(x, y, z)$ is independent of θ and ϕ

(D) '2p' orbital with quantum numbers. n = 2, ℓ = 1, m = 0, also shows angular dependence

16. In an atom, the total number of electrons having quantum numbers n = 4, $|m_\ell| = 1$ and $m_s = -\frac{1}{2}$ is **[JEE 2014]**

Functions:

1. Let $f: R - \left\{\frac{-4}{3}\right\} \to R - \left\{\frac{4}{3}\right\}$ be a function defined as $f(x) = \frac{4x}{3x+4}$. The inverse of f is the map $g: R - \left\{\frac{4}{3}\right\} \to R - \left\{\frac{-4}{3}\right\}$ is given by

(A) $g(y) = \frac{3y}{3-4y}$ (B) $g(y) = \frac{4y}{4-3y}$

(C) $g(y) = \frac{4y}{3-4y}$ (D) $g(y) = \frac{3y}{4-3y}$

9. Let f be a one-one function with domain {x, y, z} and range {1,2,3}. It is given that exactly one of the following statements is true and the remaining two are false.

$f(x) = 1; f(y) \neq 1; f(z) \neq 2$. Determine $f^{-1}(1)$

$\{1 - x$ if $x \leq 0$

9. The set of real values of ' x ' satisfying the equality $\left[\frac{3}{x}\right] + \left[\frac{4}{x}\right] = 5$ (where [ ] denotes the greatest integer function) belongs to the interval (a, b/c] where a, b, c ∈ N and b/c is in its lowest form. Find the value of a +b + c + abc.

7. If range of $f(x) = \frac{2\sin^2 x + 2\sin x + 3}{\sin^2 x + \sin x + 1}$ is $[p, q]$ then $6p - 3q$ equals

5. Find the period of $f(x) = \sin \frac{\pi}{4}[x] + \cos \frac{\pi x}{2}$, where $[.]$ denotes greatest integer function.