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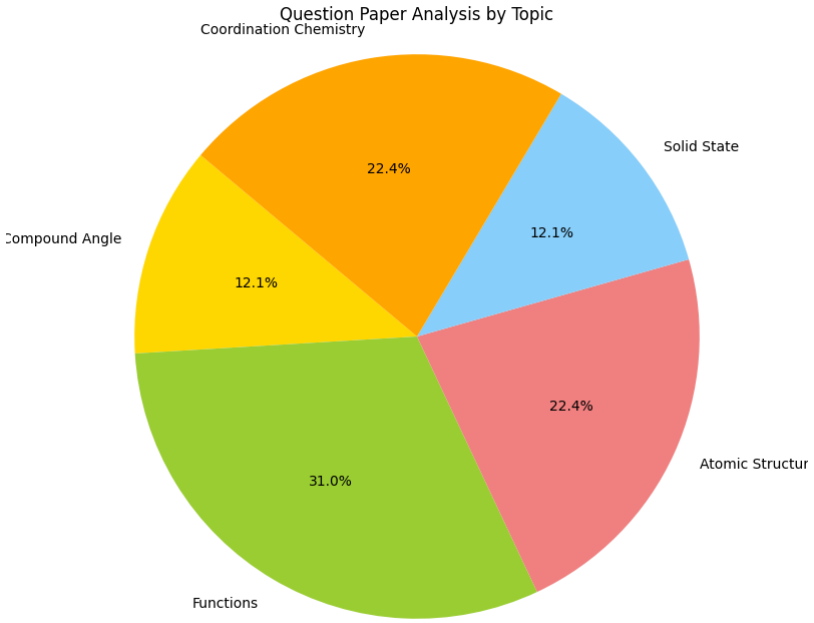
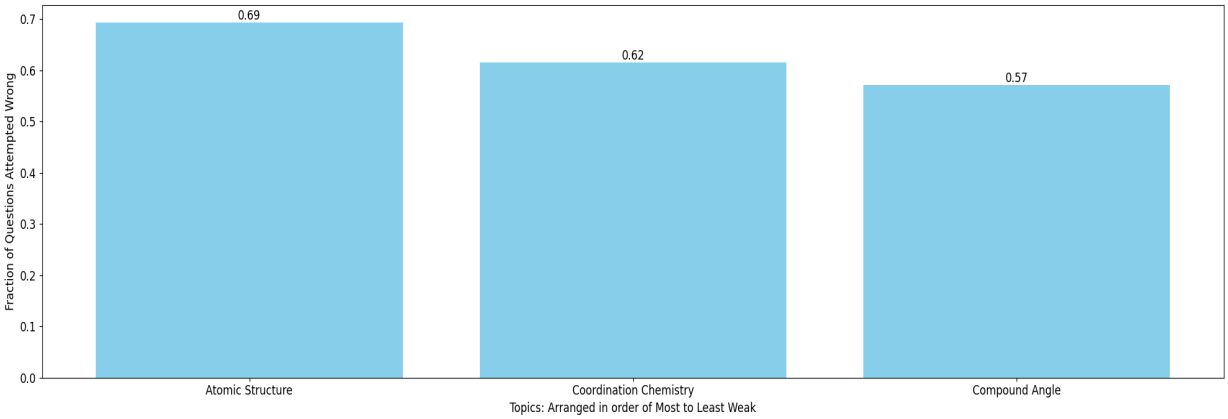
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Atomic Structure:

52. A ball weighing 10 g is moving with a velocity of 90 ms^{-1}. If the uncertainty in its velocity is 5%, then the uncertainty in its position is_____ $\times 10^{-30}$ m. (Rounded off to the nearest integer)
[Given: $h = 6.63 \times 10^{-34}$ Js]
[JEE Main (April) 2021]

Ans. **1**

64. For an electron, with n = 3 has only one radial node. The orbital angular momentum of the electron will be

(A) 0 (B) $\sqrt{6}\frac{h}{2\pi}$ (C) $\sqrt{2}\frac{h}{2\pi}$ (D) $3\left(\frac{h}{2\pi}\right)$

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

33. An atom has x energy level, then total number of lines in its spectrum are:-

(A) 1 + 2 + 3 .....(x + 1) (B) 1 + 2 + 3 ..... (x^2)

(C) 1 + 2 + 3 ..... (x - 1) (D) (x + 1) (x + 2) (x + 4)

28. If λ_0 and λ be the threshold wavelength and wavelength of incident light, the velocity of photoelectron ejected from the metal surface is **[JEE-Main(online) 2014]**

(1) $\sqrt{\frac{2hc}{m}\left(\frac{\lambda_0-\lambda}{\lambda\lambda_0}\right)}$ (2) $\sqrt{\frac{2h}{m}\left(\frac{1}{\lambda_0}-\frac{1}{\lambda}\right)}$ (3) $\sqrt{\frac{2h}{m}(\lambda_0-\lambda)}$ (4) $\sqrt{\frac{2hc}{m}(\lambda_0-\lambda)}$

Coordination Chemistry:

93. The complex ion which has no 'd' electrons in the central metal atom is

(A) $[MnO_4]^-$ (B) $[Co(NH_3)_6]^{3+}$ (C) $[Fe(CN)_6]^{3-}$ (D) $[Cr(H_2O)_6]^{3+}$

30. Consider the following complex ions P, Q and R ,

$P = [FeF_6]^{3-}$, $Q = [V(H_2O)_6]^{2+}$ and $R = [Fe(H_2O)_6]^{2+}$

The correct order of the complex ions, according to their spin-only magnetic moment values (in B.M.) is - **[JEE 2013]**

(A) R < Q < P (B) Q < R < P (C) R < P < Q (D) Q < P < R

5. The number of 3d-electrons remained in Fe^{2+} (At.no. of Fe = 26) ion is – **[AIEEE-2003]**

(1) 4 (2) 5 (3) 6 (4) 3

67. $Mn_2(CO)_{10}$ is an is an organometallic compound due to the presence of : **[JEE MAIN 2019]**

(1) Mn – O bond (2) Mn – C bond (3) Mn – Mn bond (4) C – O bond

55. Two complexes $[Cr(H_2O)_6]Cl_3$ (A) and $[Cr(NH_3)_6]Cl_3$ (B) are violet and yellow coloured, respectively. The incorrect statement regarding them is : **[JEE MAIN 2019]**

(1) Δ_0 value of (A) is less than that of (B).

(2) Δ_0 value of (A) and (B) are calculated from the energies of violet and yellow light, respectively

(3) Both absorb energies corresponding to their complementary colors.

(4) Both are paramagnetic with three unpaired electrons.

Compound Angle:

9. The maximum value of the expression $\frac{1}{\sin^2\theta+3\sin\theta\cos\theta+5\cos^2\theta}$ is **[JEE 2010]**

13. If $\frac{\cos^4 x}{\cos^2 y}+\frac{\sin^4 x}{\sin^2 y}=1$, then prove that $\frac{\cos^4 y}{\cos^2 x}+\frac{\sin^4 y}{\sin^2 x}=1$.

$\frac{\sin^8\alpha}{}$ $\frac{\cos^8\alpha}{}$ 1 $\frac{\sin^8\alpha}{}$ $\frac{\cos^8\alpha}{}$ 1

10. Two parallel chords of a circle of radius 2 are at a distance $\sqrt{3}+1$ apart. If the chords subtend at the centre, angles of $\frac{\pi}{k}$ and $\frac{2\pi}{k}$, where $k > 0$, then the value of [k] is
[Note : [k] denotes the largest integer less than or equal to k]. **[JEE 2010]**

18. Given that $3\sin x + 4\cos x = 5$ where $x \in (0, \pi/2)$. Find the value of $2\sin x + \cos x + 4\tan x$

1. The value of $\tan 9^\circ + \tan 36^\circ + \tan 9^\circ \cdot \tan 36^\circ$ is equal to

(A) 2 (B) 1 (C) $\tan 60^\circ$ (D) $\tan 30^\circ$