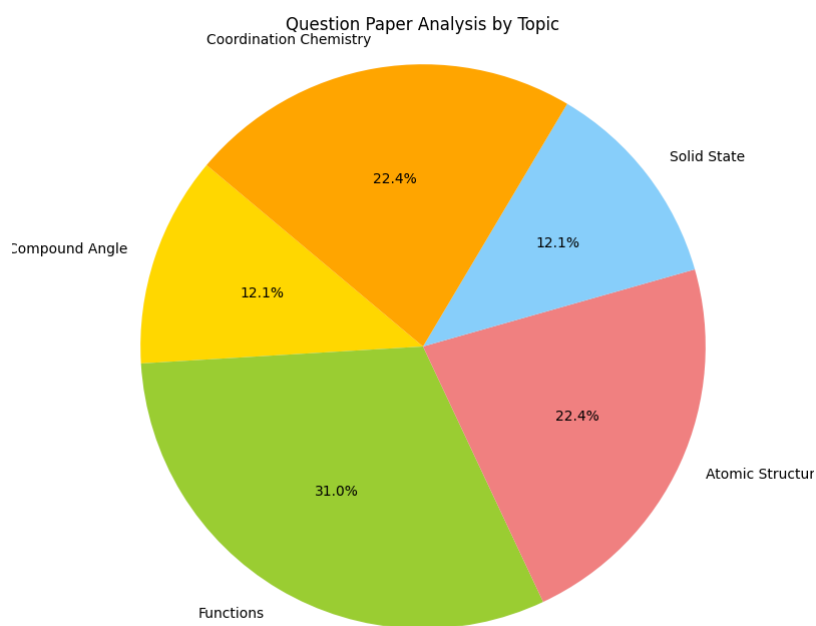
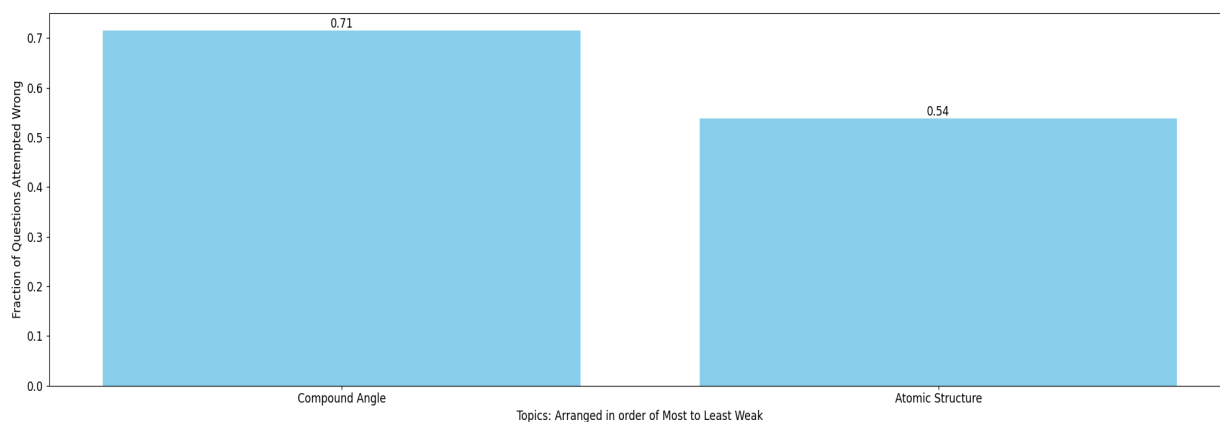


artikay_Shankar_Agrawal Total MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Compound Angle:

12. The value of $\sum_{k=1}^{13} \frac{1}{\sin\left(\frac{\pi}{6} + \frac{(k-1)\pi}{6}\right)\sin\left(\frac{\pi}{6} + \frac{k\pi}{6}\right)}$ is equal to **[JEE Advanced 2016]**
- (A) $3 - \sqrt{3}$ (B) $2(3 - \sqrt{3})$ (C) $2(\sqrt{3} - 1)$ (D) $2(2 + \sqrt{3})$

1. (a) If $y = 10\cos^2 x - 6\sin x \cdot \cos x + 2\sin^2 x$, then find the greatest & least value of y .
 (b) If $y = 1 + 2\sin x + 3\cos^2 x$, find the maximum & minimum values of $y \forall x \in \mathbb{R}$.
 (c) If $a \leq 3\cos\left(\theta + \frac{\pi}{3}\right) + 5\cos\theta + 3 \leq b$, find a and b .

4. Prove that $\frac{\cos 8A \cos 5A - \cos 12A \cos 9A}{\sin 8A \cos 5A + \cos 12A \sin 9A} = \tan 4A$

3. Find values of :

- (i) $\tan 225^\circ \cot 405^\circ + \tan 765^\circ \cot 675^\circ$
 (ii) $\tan 720^\circ - \cos 270^\circ - \sin 150^\circ \cos 120^\circ$
 (iii) $\sin 600^\circ \cos 390^\circ + \cos 480^\circ \sin 150^\circ$
 (iv) $\cos 24^\circ + \cos 55^\circ + \cos 125^\circ + \cos 204^\circ + \cos 300^\circ$
 (v) $\tan \frac{11\pi}{3} - 2\sin \frac{2\pi}{3} - \frac{3}{4} \operatorname{cosec}^2 \frac{\pi}{4} + 4\cos^2 \frac{17\pi}{6}$
 (vi) $\sin (1560^\circ) + \cos (-3030^\circ) + \tan (-1260^\circ)$

4. If $u = \sqrt{a^2 \cos^2 \theta + b^2 \sin^2 \theta} + \sqrt{a^2 \sin^2 \theta + b^2 \cos^2 \theta}$, then the difference between the maximum and minimum values of u^2 is given by **[AIEEE 2004]**
- (A) $2(a^2 + b^2)$ (B) $2\sqrt{a^2 + b^2}$ (C) $(a + b)^2$ (D) $(a - b)^2$

Atomic Structure:

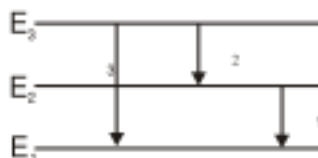
20. The electrons identified by quantum numbers n and l : [AIEEE-2012]
 (a) $n = 4, l = 1$ (b) $n = 4, l = 0$ (c) $n = 3, l = 2$ (d) $n = 3, l = 1$

Can be placed in order of increasing energy as

- (1) $(a) < (c) < (b) < (d)$ (2) $(c) < (d) < (b) < (a)$
 (3) $(d) < (b) < (c) < (a)$ (4) $(b) < (d) < (a) < (c)$

24. In the following transition which statement is correct?

- (A) $E_{3-1} = E_{3-2} - E_{2-1}$
 (B) $\lambda_3 = \lambda_1 + \lambda_2$
 (C) $\nu_3 = \nu_2 + \nu_1$
 (D) All of these



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) $\Psi^2(r)$ 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

36. The ground state energy of hydrogen atom is -13.6 eV. The energy of second excited state He^+ ion in eV is : [JEE Main (Jan.) 2019]

- (1) -54.4 (2) -6.04 (3) -3.4 (4) -27.2

37. A photon of energy $h\nu$ is absorbed by a free electron of a metal having work function $w < h\nu$. Then :

- (A) The electron is sure to come out
 (B) The electron is sure to come out with a kinetic energy $(h\nu - w)$
 (C) Either the electron does not come out or it comes with a kinetic energy $(h\nu - w)$
 (D) It may come out with a kinetic energy less than $(h\nu - w)$