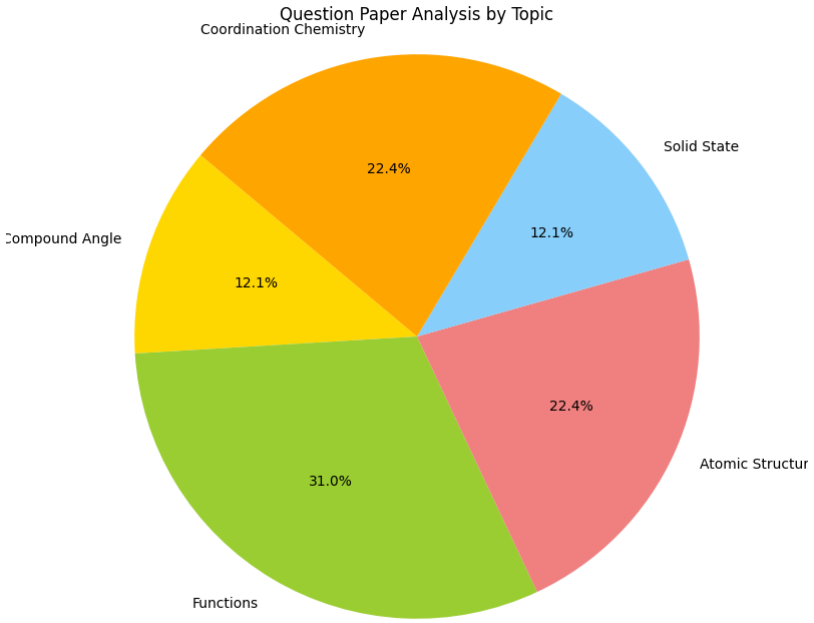
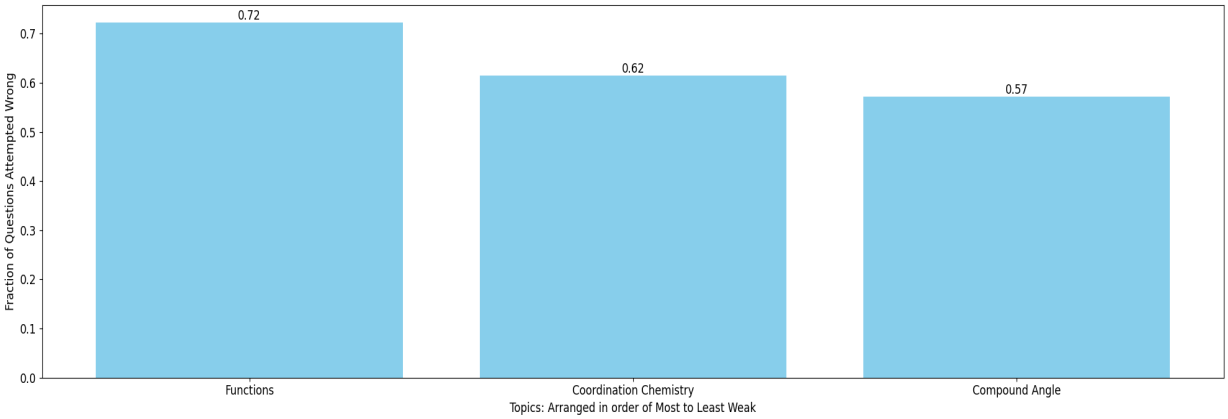
Aditya Total
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

9. The set of real values of ' x ' satisfying the equality $\left[\frac{5}{x}\right] + \left[\frac{4}{x}\right] = 5$ (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.

26. For a suitably chosen real constant a, let a function, f : R–{–a} → R be defined by f (x) = $\frac{a-x}{a+x}$. Further suppose that for any real number x ≠ – a and f (x) ≠ – a, (*fof*)(x) = x. Then $f\left(-\frac{1}{2}\right)$ is equal to: **[JEE - Main 2020]**

(A) – 3 (B) 3 (C) $\frac{1}{3}$ (D) $-\frac{1}{3}$

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 − 3 q equals

9. Let f(x) = $\left[\frac{1}{\cos\{x\}}\right]$ where [y] and {y} denote greatest integer and fractional part functions respectively and g(x) = $2x^2 - 3x(k+1) + k(3k+1)$. If g(f(x)) < 0∀x ∈ R then find the number of integral values of k.

10. Consider, $f(x) = \{x + [\log_2 (2 + x)]\} +$

$$\{x + [\log_2 (2 + x^2)]\} + \cdots .. + \{x + [\log_2 (2 + x^{10})]\}$$

Identify the correct statement(s)

(A) $[f(e)] = 7$.

(B) $f(\pi) = 20\pi - 60$.

(C) the number of solutions of the equation $f(x) = x$ is 9 .

(D) the number of solutions of the equation $f(x) = x$ is 10 .

[Note : $\{y\}$ and $[y]$ denotes the fractional part function and greatest integer function respectively.]

INTEGERTYPE

Coordination Chemistry:

76. Among (a) – (b), the complexes that can display geometrical isomerism are : **[JEE MAIN 2020]**

(a) $[Pt(NH_3)_3Cl]^+$ (b) $[Pt(NH_3)Cl_5]^-$

(c) $[Pt(NH_3)_2Cl(NO_2)]$ (d) $[Pt(NH_3)_4ClBr]^{2+}$

(1) (c) and (d) (2) (b) and (c) (3) (d) and (a) (4) (a) and (b)

21. Each of the following obey Sidgwick effective atomic number rule except

(A) $[Cr(CO)_6]$ (B) $[Co(NH_3)_6]^{3+}$

(C) $[Ni(NH_3)_6]^{2+}$ (D) $[PtCl_6]^{2-}$

8. How many $EDTA^{-4}$ molecules are required to make an octahedral complex with a Ca^{2+} ion ?

(A) Six (B) Three (C) One (D) Two

6. Ammonia forms the complex ion $[Cu(NH_3)_4]^{2+}$ with copper ions in alkaline solutions but not in acidic solution. What is the reason for it :- **[AIEEE-2003]**

(1) In acidic solutions hydration protects copper ions

(2) In acidic solutions protons coordinate with ammonia molecules forming NH_4^+ ions and NH_3 molecules are not available

(3) In alkaline solutions insoluble $Cu(OH)_2$ is precipitated which is soluble in excess of any alkali

(4) Copper hydroxide is an amphoteric substance

59. Wilkinson catalyst is : **[JEE MAIN 2019]**

(1) $[(Et_3P)_3RhCl]$ $(Et = C_2H_5)$ (2) $[(Ph_3P)_3RhCl]$

(3) $[(Ph_3P)_3IrCl]$ (4) $[(Et_3P)_3IrCl]$

Compound Angle:

1. If $m\tan(\theta - 30^\circ) = n\tan(\theta + 120^\circ)$, show that $\cos 2\theta = \frac{m+n}{2(m-n)}$.

3. (a) Find the maximum and minimum values of $27^{\cos 2x} \cdot 81^{\sin 2x}$.

(b) Find the smallest positive values of x & y satisfying, $x - y = \frac{\pi}{4}$, $\cot x + \cot y = 2$.

[REE 2000,3]

7. Let $f(\theta) = 2\cos\theta - \cos^2\theta, \forall\theta \in R$ then which one of the following relation is true ?

(A) $-2 \le f(\theta) \le 1$ (B) $\frac{1}{4} \le f(\theta) \le 1$

(C) $-3 \le f(\theta) \le 1$ (D) $-3 \le f(\theta) \le 0$

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

2. Prove that $\frac{\sin 5A - \sin 3A}{\cos 5A + \cos 3A} = \tan A$