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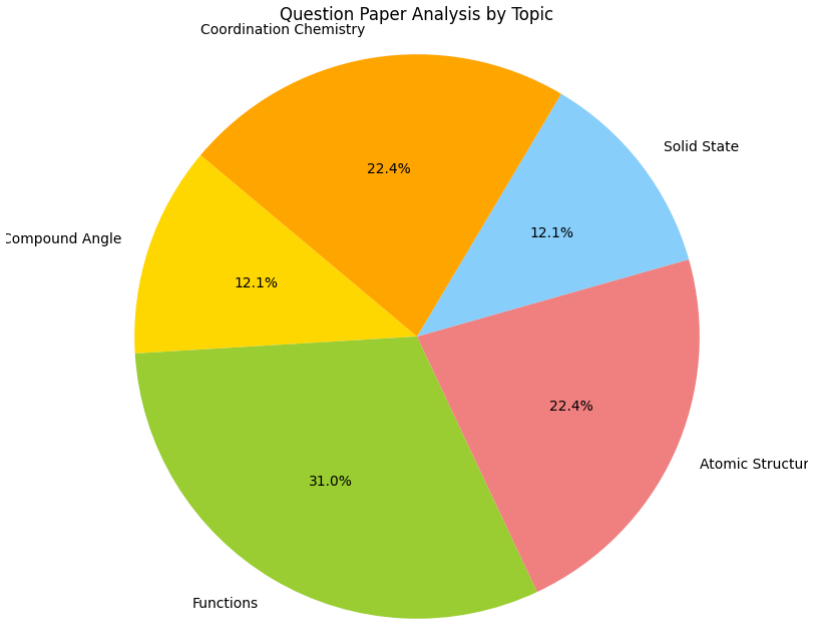
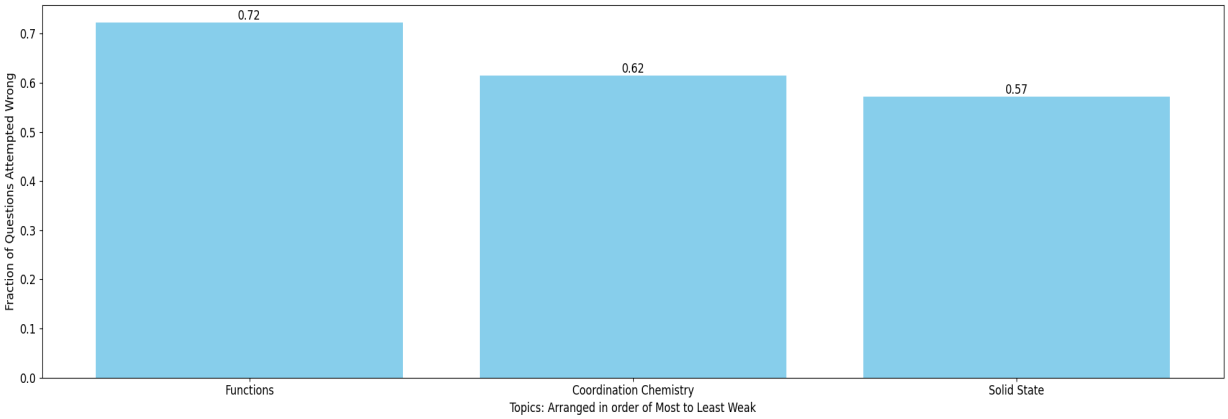
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

12. Let $f(x) = ([a]^2 - 5[a] + 4)x^3 - (6\{a\}2 - 5\{a\} + 1)x - \text{sgn } x.\ (\tan x)$ be an even function for $\forall x \in R$. If S be the sum of all possible values of 'a' then [S] is (Here [.] & {} represent greatest integer & fractional part functions respectively.)

4. Let $f: R \to [1, \infty)$ be defined as

$f(x) = \log_{10}\left(\sqrt{3x^2 - 4x + k + 1} + 10\right)$. If f(x) is surjective, then

(A) $k = \frac{1}{3}$ (B) $k < \frac{1}{3}$ (C) $k > \frac{1}{3}$ (D) $k = 1$

1. (a) Let $P(x) = x^6 + ax^5 + bx^4 + cx^3 + dx^2 + ex + f$ be a polynomial such that $P(1) = 1; P(2) = 2; P(3) = 3; P(4) = 4; P(5) = 5$ and $P(6) = 6$ then find the value of $P(7)$.

(b) Let a and b be real numbers and let $f(x) = a\sin x + b\sqrt[3]{x} + 4, \forall x \in R$.

If $f\left(\log_{10}(\log_3 10)\right) = 5$ then find the value of $f\left(\log_{10}(\log_{10} 3)\right)$.

28. A function f(x) is given by $f(x) = \frac{5^x}{5^x + 5}$ then the sum of the series **[JEE - Main 2021]**

$f\left(\frac{1}{20}\right) + f\left(\frac{2}{20}\right) + f\left(\frac{3}{20}\right) + \ldots\ldots + f\left(\frac{39}{20}\right)$ is equal to

(A) $\frac{19}{2}$ (B) $\frac{49}{2}$ (C) $\frac{29}{2}$ (D) $\frac{39}{2}$

$\begin{cases} k+1 & \text{if k is odd} \end{cases}$

4. The value of $f(-89) - f(-67) + f(46)$ is equal to

(A) 4 (B) 5 (C) 6 (D) 7

MULTIPLE CORRECT TYPE

Coordination Chemistry:

94. The spin only magnetic moment of cobalt in the compound $K_2[Co(SCN)_4]$ is

(A) $\sqrt{3}$ BM (B) $\sqrt{8}$ BM (C) $\sqrt{15}$ BM (D) $\sqrt{24}$ BM

40. Coordination compounds $[Pt(NH_3)_3(NCS)]$ and $[Pt(NH_3)_3(SCN)]$ are examples of.....isomerism

(A) coordination (B) linkage (C) ionizaiton (D) optical

41. In the complex acetylbromidodicarbonylbis (triethylphosphine)iron(II), the number of Fe–C bond(s) is- **[JEE Ad. 2015]**

6. Which of the following pair is expected to exhibit same colour in solution? **[JEE 2005]**

(A) $VOCl_2$; $FeCl_2$ (B) $CuCl_2$; $VOCl_2$ (C) $MnCl_2$; $FeCl_2$ (D) $FeCl_2$; $CuCl_2$

82. Which of the following is correctly matched ?

Column I	**Column II**	**Column III**
(A) $[Cr(CO)_6]$	Paramagnetic	Octahedral, sp^3d^2
(B) $[Fe(CO)_5]$	Paramagnetic	Trigonal bipyramid, sp^3d
(C) $[Co(CO)_4]^-$	diamagnetic	tetrahedral, sp^3
(D) $[Ni(CO)_4]$	diamagnetic	spuare planar, dsp^2

Solid State:

7. Which of the following statement(s) is/are correct –

(A) In a face centred cubic unit cell, the edge centre is an octahedral void.

(B) In a face centred cubic unit cell, the body centre is an octahedral void.

(C) In FCC unit cell, octahedral and tetrahedral voids are equal in number.

(D) Coordination number of FCC unit cell is 12

1.81 Å respectively. Calculate the co-ordination numbers of the cations in the crystals of MgS, MgO and CsCl.

PROBLEMS BASED ON TV AND OV

12. Silver (atomic weight = 108 g mol^{-1}) has a density of 10.5 g cm^{-3}. The number of silver atoms on a surface of area 10^{-12} m^2 can be expressed in scientific notation as y ´ 10^x. The value of x is

[JEE 2010]

11. A match box exhibit -

(A) Cubic geometry (B) Monoclinic geometry

(C) Tetragonal geometry (D) Orthorhombic geometry

3. What are the crystallographic parameters of hexagonal, monoclinic and triclinic unit cell respectively.

PROBLEMS BASED ON 2D ARRANGEMENT