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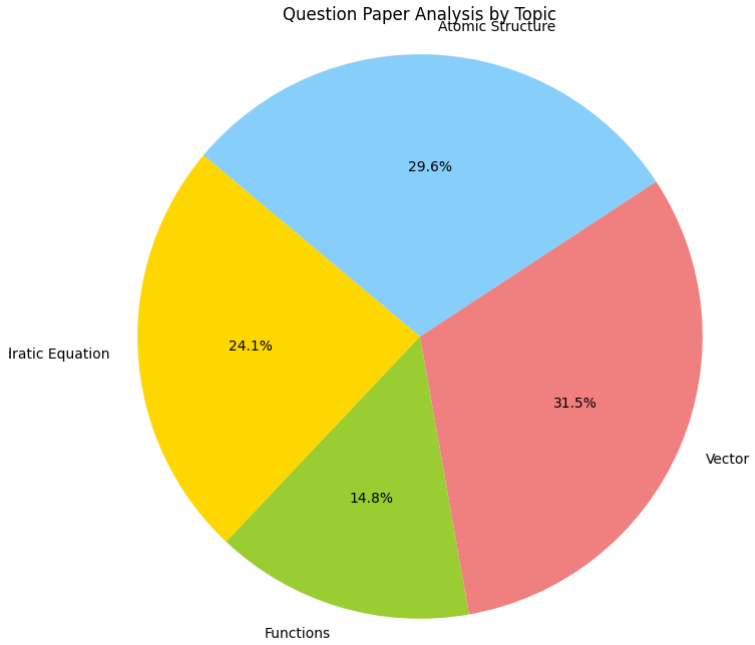
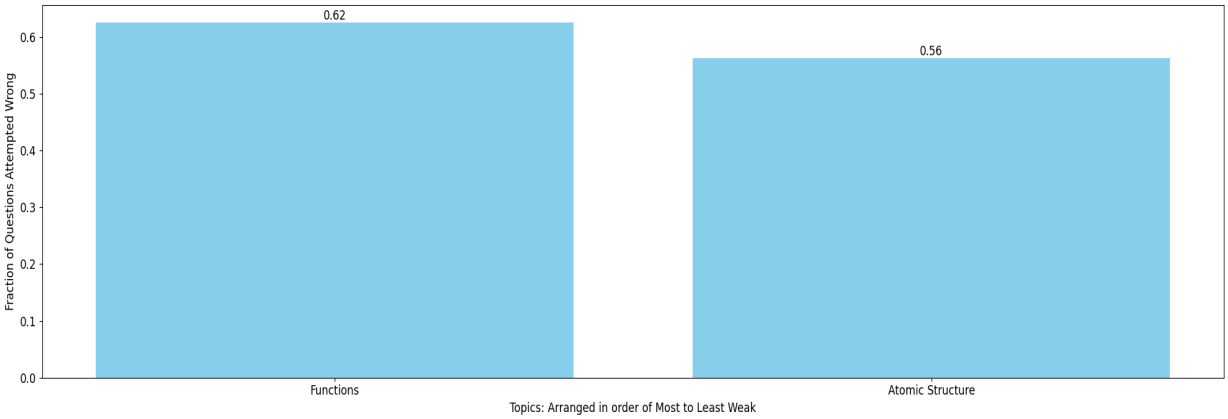
Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

30. The real valued function $f(x) = \frac{\operatorname{cosec} x}{\sqrt{x-[x]}}$, where [x] denotes the greatest integer less than or equal to x, is defined for all x belonging to **[JEE - Main 2021]**

(A) all reals except integers
(B) all non-integers except the interval $[-1, 1]$
(C) all integers except 0, −1, 1
(D) all reals except the Interval $[-1, 1]$

9. Consider the function $f(x) = x + \sqrt{1 - x^2}$, then which of the following is/are CORRECT?

(A) Range of f(x) is $[-1, \sqrt{2}]$.

(B) f is many one.

(C) f is either even or odd.

(D) Range of f(x) is identical to range of $g(x) = \sqrt{2}\cos\left(x - \frac{\pi}{4}\right)$.

1. The domain of the function $f(x) = \frac{1}{\sqrt{|x|-x}}$ is :- **[AIEEE 2011]**

(A) $(-\infty, 0)$ (B) $(-\infty, \infty) - \{0\}$ (C) $(-\infty, \infty)$ (D) $(0, \infty)$

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 $f\left(\log_{10}(\log_{10} 3)\right)$.

8. If $F(n+1) = \frac{2F(n)+1}{2}, n = 2, \ldots\ldots 8 F(1) = 2$ then $\frac{F(101)}{26}$ equals

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Atomic Structure:

18. Statement-1 : Emitted radiations will fall in visible range when an electron jump from higher level to n = 2 in Li^{+2} ion.

Statement-2 : First for lines of Balmer series of H-atom belong to visible range.

(A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

(B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

(C) Statement-1 is true, statement-2 is false.

(D) Statement-1 is false, statement-2 is true.

Match the column :

58. The number of waves made by a Bohr electron in an orbit of maximum magnetic quantum number + 2 :

(A) 3 (B) 4 (C) 2 (D) 1

Schrödinger wave equation and orbital concept

46. An electron has kinetic energy 2.8×10^{-23} J. de-Broglie wavelength will be nearly :-

($m_e = 9.1 \times 10^{-31}$ kg)

(A) 9.28×10^{-24} m (B) 9.28×10^{-7} m (C) 9.28×10^{-8} m (D) 9.28×10^{-10} m

51. Isotope(s) of hydrogen which emits low energy β–particles with $t_{\frac{1}{2}}$ value > 12 years is/are:

[JEE Main (April) 2021]

(A) Protium (B) Tritium

(C) Deuterium (D) Deuterium and Tritium

Ans. B

3. The ratio of the energy of a photon of 2000 Å wavelength radiation to that of 4000 Å radiation is

(A) 1 / 4 (B) 4 (C) 1 / 2 (D) 2