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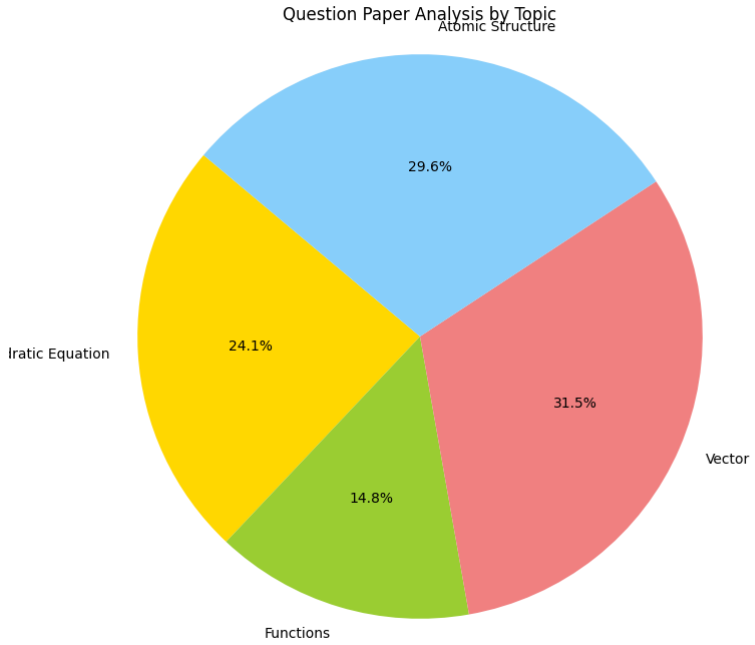
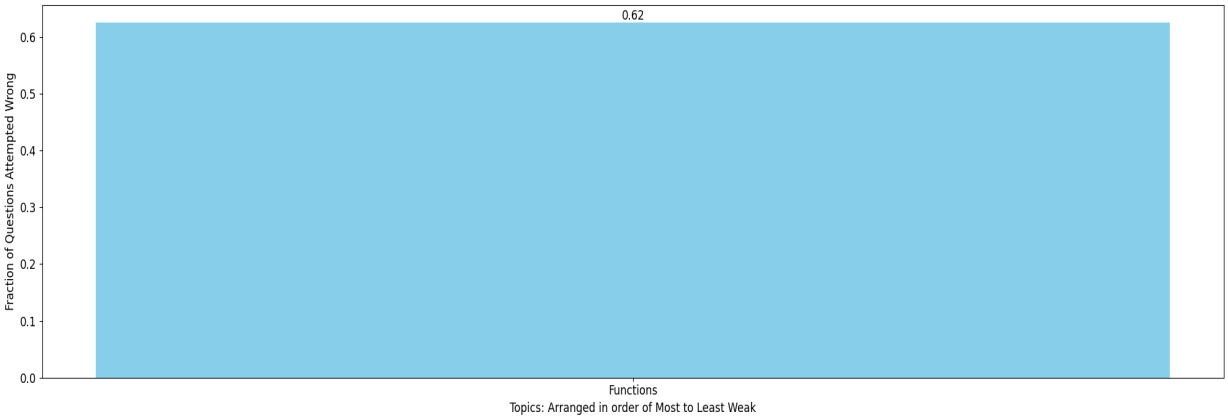
Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

17. Let a function f: $(0,\infty) \rightarrow (0,\infty)$ be defined by $f(x) = \left|1 - \frac{1}{x}\right|$. Then, f is **[JEE - Main 2019]**

(A) injective only
(B) both injective as well as surjective
(C) not injective but it is surjective
(D) neither injective nor surjective

2. If $g(x) = \left(4\cos^4 x - 2\cos 2x - \frac{1}{2}\cos 4x - x^7\right)^7$ then the value of g(g(100)) is equal to

(A) -1 (B) 0 (C) 1 (D) 100

19. Let f: R → R be defined by $f(x) = \frac{x}{1+x^2}$ $x \in R$. Then, the range of f is **[JEE - Main 2019]**

(A) $\left[-\frac{1}{2},\frac{1}{2}\right]$ (B) $(-1,1) - \{0\}$ (C) $R - \left[-\frac{1}{2},\frac{1}{2}\right]$ (D) $R - [-1,1]$

9. Find the sum of all the solutions of the equation $\cot\frac{\pi x}{2} = \log_2\{x\}$ in $x \in (0,100)$.

[Note: {k} denotes the fractional part function of k.]

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33. For $\alpha \in N$, consider a relation R on N given by $R = \{(x, y) : 3x + \alpha, y \text{ is a multiple of } 7\}$. The relation R is an equivalence relation if and only if: **[JEE - Main 2022]**

(A) $\alpha = 14$
(B) α is a multiple of 4
(C) 4 is the remainder when α is divided by 10
(D) 4 is the remainder when α is divided by 7