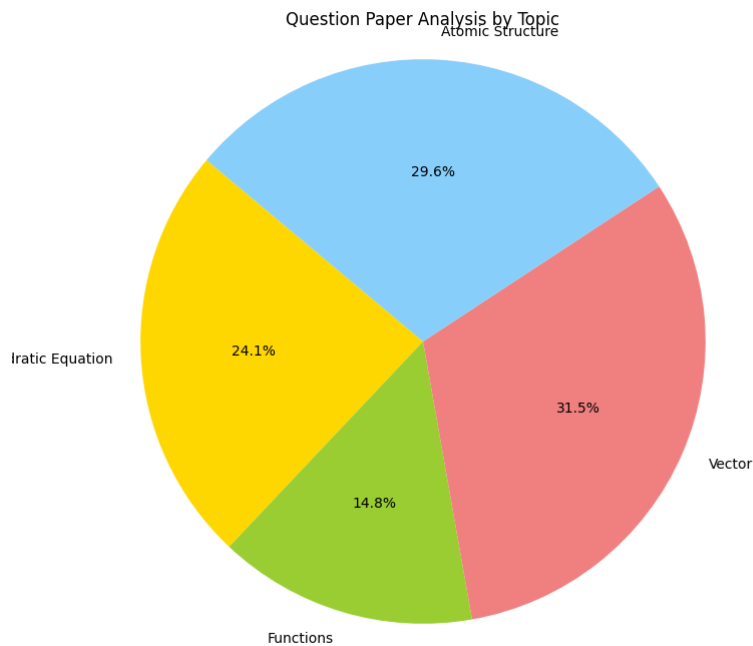
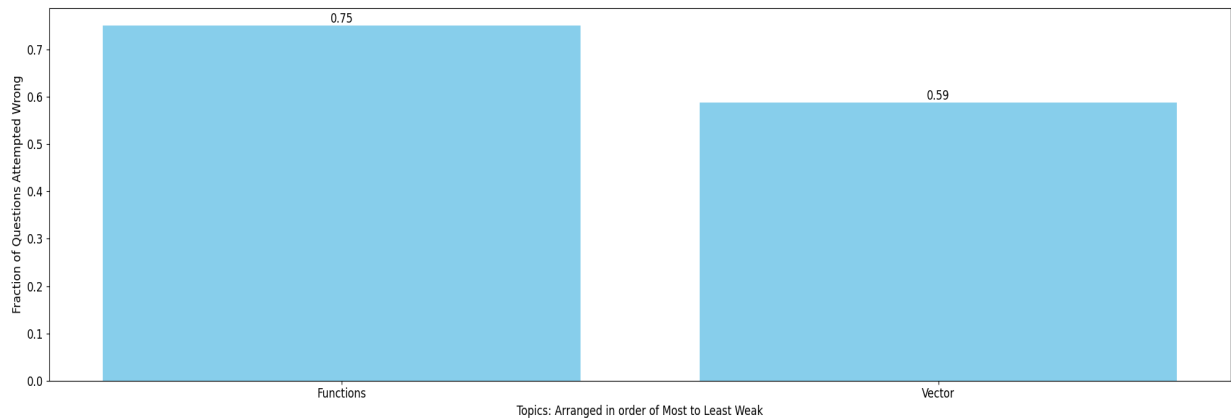


Parambrata Dutta Total
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

2. The function $f(x)$ is defined by $f(x) = \cos^4 x + K \cos^2 2x + \sin^4 x$, where K is a constant. If the function $f(x)$ is a constant function, the value of k is
 (A) -1 (B) $-1/2$ (C) 0 (D) $1/2$
7. If range of $f(x) = \frac{\cos^2 x + \cos^2 x + 3}{\sin^2 x + \sin^2 x + 1}$ is $[p, q]$ then $6p - 3q$ equals
 (A) $2F(n)+1$ (B) $F(101)$
32. Let $f(x)$ be a polynomial of degree 3 such that $f(x) = -\frac{x}{k}$ for $k = 2, 3, 4, 5$. Then the value of $52 - 10f(10)$ is equal to _____.
[JEE - Main 2021]
5. Let $f(x) = x^{135} + x^{125} - x^{115} + x^5 + 1$. If $f(x)$ is divided by $x^3 - x$ then the remainder is some function of x say $g(x)$. Find the value of $g(10)$.
41. Let $A = \{ \lambda \in \mathbb{R} : [x+3] + [x+4] \leq \}$, $B = \left\{ x \in \mathbb{R} : 3^x \left(\sum_{r=1}^{\infty} \frac{x}{10^r} \right) < 3^{-3x} \right\}$, where $[t]$ Denote greatest integer function. Then
[JEE - Main 2023]
 (A) $A \subset B, A \neq B$ (B) $A \cap B = \phi$ (C) $A = B$ (D) $B \subset C, A \neq B$

Vector:

21. The vector $\vec{OP} = \hat{i} + 2\hat{j} + 2\hat{k}$ turns through a right angle, passing through the positive x -axis on the way. Find the vector in its new position.

59. Position vectors of the four angular points of a tetrahedron ABCD are $A(3, -2, 1)$; $B(3, 1, 5)$; $C(4, 0, 3)$ and $D(1, 0, 0)$. Acute angle between the plane faces ADC and ABC is
 (A) $\tan^{-1}(5/2)$ (B) $\cos^{-1}(2/5)$ (C) $\operatorname{cosec}^{-1}(5/2)$ (D) $\cot^{-1}(3/2)$
27. Let $\vec{a} = 3\hat{i} + 2\hat{j} + 2\hat{k}$ and $\vec{b} = \hat{i} + 2\hat{j} - 2\hat{k}$ be two vectors. If a vector perpendicular to both the vectors $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$ has the magnitude 12 then one such vector is: [JEE (Main)-2019]
 (1) $4(-2\hat{i} - 2\hat{j} + \hat{k})$ (2) $4(2\hat{i} - 2\hat{j} - \hat{k})$ (3) $4(2\hat{i} + 2\hat{j} - \hat{k})$ (4) $4(2\hat{i} + 2\hat{j} + \hat{k})$
14. If the vectors $3\vec{p} + \vec{q}$; $5\vec{p} - 3\vec{q}$ and $2\vec{p} + \vec{q}$; $4\vec{p} - 2\vec{q}$ are pairs of mutually perpendicular vectors then $\sin(\vec{p}, \vec{q})$ is
 (A) $\sqrt{55}/4$ (B) $\sqrt{55}/8$ (C) $3/16$ (D) $\sqrt{247}/16$
9. Let $\vec{a}, \vec{b}, \vec{c}$ be three non-zero vectors which are pairwise non-collinear. If $\vec{a} + 3\vec{b}$ is collinear with \vec{c} and $\vec{b} + 2\vec{c}$ is collinear with \vec{a} , then $\vec{a} + 3\vec{b} + 6\vec{c}$ is : [AIEEE-2011]
 (1) $\vec{a} + \vec{c}$ (2) \vec{a} (3) \vec{c} (4) $\vec{0}$