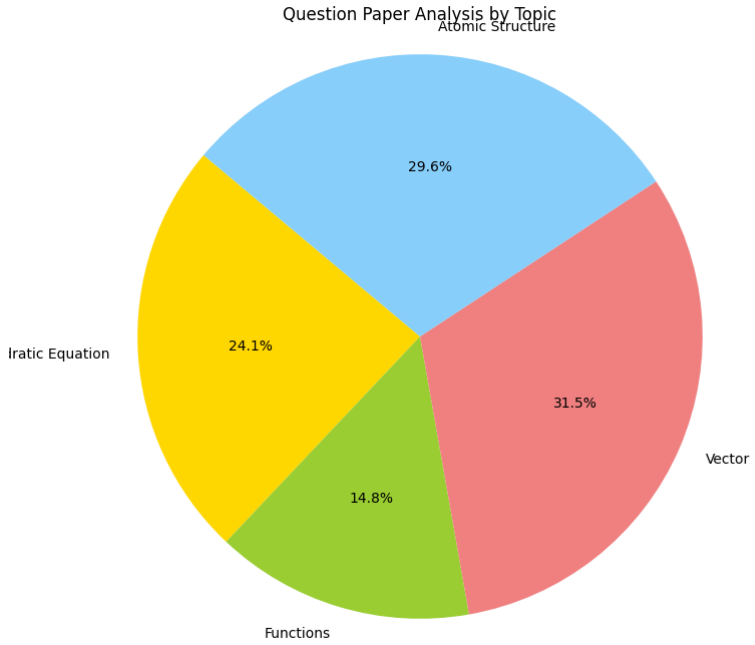
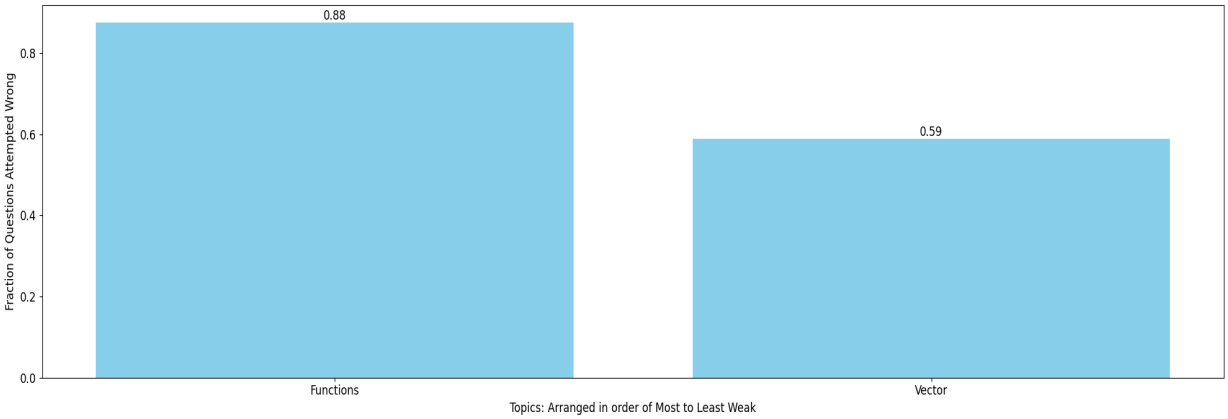
Avisha trivedi Total
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

6. Let A = {1,2,3,4} and B = {1,2,3,4}. If f: A → B is an one-one function and f(x) ≠ x for all x ∈ A, then the number of such possible functions, is

(A) 6 (B) 9 (C) 24 (D) 44

7. Let f be a function defined as f: $\left(0, e^{\frac{-1}{2}}\right] \to \left[\frac{-1}{4}, \infty\right)$, $f(x) = (\ln x)^2 + 3\ln x + 2$ then $f^{-1}(x)$ equals

(A) $\log\left(\frac{-3+\sqrt{4x+1}}{2}\right)$ (B) $\log\left(\frac{-3-\sqrt{4x+1}}{2}\right)$

(C) $e^{\frac{-3+\sqrt{4x+1}}{2}}$ (D) $e^{\frac{-3-\sqrt{4x+1}}{2}}$

4. If a polynomial function ' f ' satisfies the relation $\log_2(f(x)) = \log_2\left(2 + \frac{2}{3} + \frac{2}{9} + \cdots \infty\right)$ $\log_3\left(1 + \frac{f(x)}{f\left(\frac{1}{x}\right)}\right)$ and f(10) = 1001 then the value of f(20) is

(A) 2002 (B) 7999 (C) 8001 (D) 16001

x^2+x+c [5 3]

6. Suppose f(x) = sin x and $g(x) = 1 - \sqrt{x}$. Then find the domain and range of the following functions.

(a) fog (b) gof (c) fof (d) gog

$(1-x)$

29. Let A = {1, 2, 3, ..., 10} and f: A → A be defined as $f(k) = \begin{cases} \text{A T I} & \text{if k is odd} \\ k & \text{if k is even} \end{cases}$ Then the number of possible function g : A → A such that gof = f is **[JEE - Main 2021]**

(A) 105 (2) $^{10}C_5$ (3) 55 (4) 5!

$\cos ec^{-1} x$

Vector:

33. Given three vectors $\vec{a}, \vec{b}$ & $\vec{c}$ each two of which are non collinear. Further if $(\vec{a}+\vec{b})$ is collinear with $\vec{c}$, $(\vec{b}+\vec{c})$ is collinear with $\vec{a}$ & $|\vec{a}| = |\vec{b}| = |\vec{c}| = \sqrt{2}$. Then the value of $\vec{a}\cdot\vec{b}+\vec{b}\cdot\vec{c}+\vec{c}\cdot\vec{a}$:

(A) is 3 (B) is – 3 (C) is 0 (D) cannot be evaluated

23. Let $\vec{\alpha} = 3\hat{i}+\hat{j}$ and $\vec{b} = 2\hat{i}-\hat{j}+3\hat{k}$. If $\vec{\beta} = \vec{\beta}_1 - \vec{\beta}_2$, where $\vec{\beta}_1$ is parallel to $\vec{\alpha}$ and $\vec{\beta}_2$ is perpendicular to $\vec{\alpha}$, then $\vec{\beta}_1 \times \vec{\beta}_2$ is equal to: **[JEE (Main)-2019]**

(1) $-3\hat{i}+9\hat{j}+5\hat{k}$ (2) $3\hat{i}-9\hat{j}-5\hat{k}$ (3) $\frac{1}{2}(-3\hat{i}+9\hat{j}+5\hat{k})$ (4) $\frac{1}{2}(3\hat{i}-9\hat{j}+5\hat{k})$

11. Consider the following 3 lines in space

$L_1 : \vec{r} = 3\hat{i}-\hat{j}+2\hat{k}+\lambda(2\hat{i}+4\hat{j}-\hat{k})$

$L_2 : \vec{r} = \hat{i}+\hat{j}-3\hat{k}+\mu(4\hat{i}+2\hat{j}+4\hat{k})$

$L_3 : \vec{r} = 3\hat{i}+2\hat{j}-2\hat{k}+t(2\hat{i}+\hat{j}+2\hat{k})$

Then which one of the following pair(s) are in the same plane.

(A) only L_1L_2 (B) only L_2L_3 (C) only L_3L_1 (D) L_1L_2 and L_2L_3

---

9. $\vec{a}, \vec{b}, \vec{c}$ are three non-zero vectors, no two of which are collinear and the vector $\vec{a}+\vec{b}$ is collinear with $\vec{c}$, $\vec{b}+\vec{c}$ is collinear with $\vec{a}$, then $\vec{a}+\vec{b}+\vec{c}$ is equal to -

(A) $\vec{a}$ (B) $\vec{b}$ (C) $\vec{c}$ (D) none of these

22. Let $\vec{a} = 3\hat{i}+2\hat{j}+x\hat{k}$ and $\vec{b} = \hat{i}-\hat{j}+\hat{k}$, for some real x. Then $|\vec{a}\times\vec{b}| = r$ is possible if :

[JEE (Main)-2019]

(1) $r \geq 5\sqrt{\frac{3}{2}}$ (2) $\sqrt{\frac{3}{2}} < r \leq 3\sqrt{\frac{3}{2}}$ (3) $3\sqrt{\frac{3}{2}} < r < 5\sqrt{\frac{3}{2}}$ (4) $0 < r \leq \sqrt{\frac{3}{2}}$