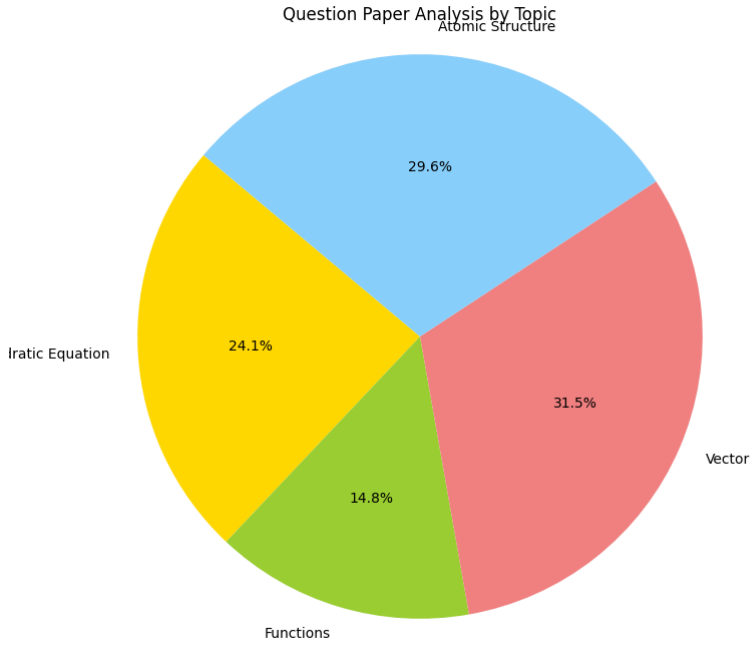
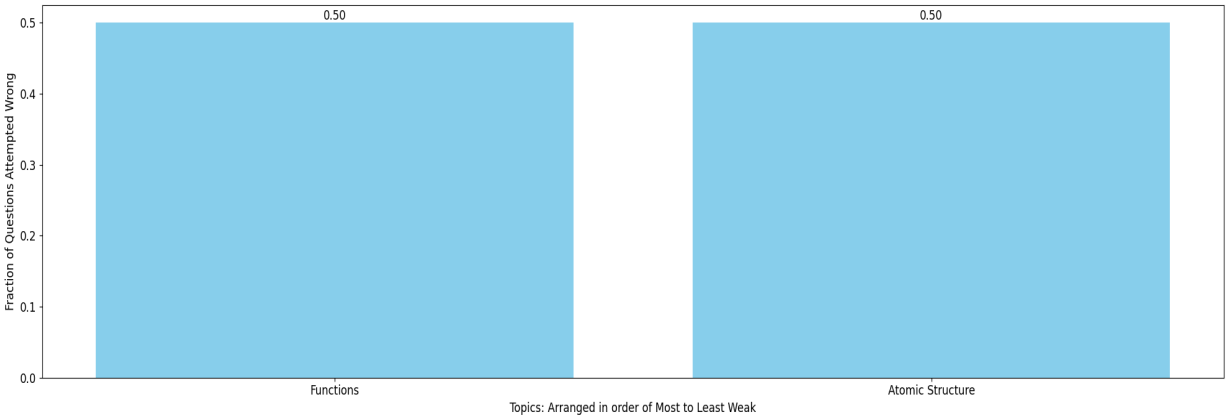
shivansh srivastava Total
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

4. If $f(x) = -1 + |x-2|, 0 \le x \le 4$ $g(x) = 2 - |x|, -1 \le x \le 3$

Then find $f \circ g(x)$ & gof (x). Draw rough sketch of the graphs of fog(x) & gof(x).

3. If f(x) is defined on (0,1), then the domain of definition of $f(e^x) + f(\ln|x|)$ is

(A) $(-e, -1)$ (B) $(-e, -1) \cup (1, e)$

(C) $(-\infty, -1) \cup (1, \infty)$ (D) $(-e, e)$

8. Let $f(x) = \ln x$ and $g(x) = x^2 - 1$

Column-I contains composite functions and column-II contains their domain. Match the entries of column-I with their corresponding answer is column-II.

Column-I	**Column-II**
(A) fog	(P) $(1, \infty)$
(B) gof	(Q) $(-\infty, \infty)$
(C) fof	(R) $(-\infty, -1) \cup (1, \infty)$
(D) gog	(S) $(0, \infty)$

INTEGER TYPE

27. Let $f, g : N \to N$ such that $f(n+1) = f(n) + f(1)$ $\forall n \in N$ and g be any arbitrary function. Which of the following statements is NOT true ? **[JEE - Main 2021]**

(A) If fog is one one, then g is one one (B) If f is onto, then $f(n) = n \; \forall \; n \in N$

(C) f is one-one (D) If g is onto, then fog is one-one

5. Let f: $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right) \to R$ be given by $f(x) = (\log(\sec x + \tan x))^3$. Then, **[JEE Ad. 2014]**

(A) f(x) is an odd function (B) f(x) is a one-one function

(C) f(x) is an onto function (D) f(x) is an even function

Atomic Structure:

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**

30. The ratio of wave length of photon corresponding to the α-line of Lyman series in H-atom and β-line of Balmer series in He^+ is

(A) 1 : 1 (B) 1 : 2 (C) 1 : 4 (D) 3 : 16

27. Based on the equation **[JEE-Main(online) 2014]**

$$\Delta E = -2.0 \times 10^{-18}\ J \left(\frac{1}{n_2^2} - \frac{1}{n_1^2}\right)$$

the wavelength of the light that must be absorbed to excite hydrogen electron from level n = 1 to level n = 2 will be ($h = 6.625 \times 10^{-34}$ Js, $C = 3 \times 10^8\ ms^{-1}$)

(1) 2.650×10^{-7} m (2) 1.325×10^{-7} m (3) 1.325×10^{-10} m (4) 5.300×10^{-10} m

10. Which of the following statements in relation to the hydrogen atom is correct ?

(1) 3s, 3p and 3d orbitals all have the same energy **[AIEEE-2005]**
(2) 3s and 3p orbitals are of lower energy than 3d orbitals
(3) 3p orbital is lower in energy than 3d orbital
(4) 3s orbitals is lower in energy than 3p orbital

64. For an electron, with n = 3 has only one radial node. The orbital angular momentum of the electron will be

(A) 0 (B) $\sqrt{6}\frac{h}{2\pi}$ (C) $\sqrt{2}\frac{h}{2\pi}$ (D) $3\left(\frac{h}{2\pi}\right)$