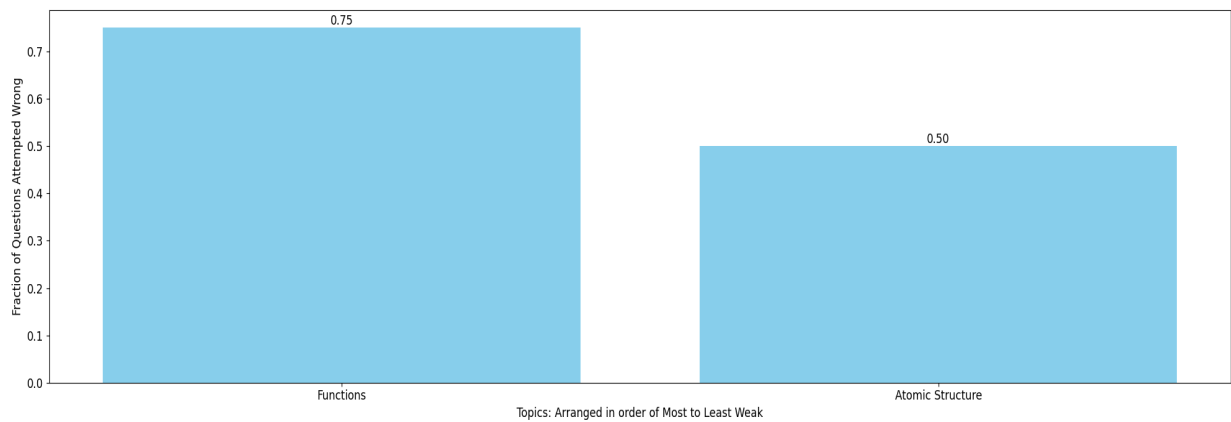


Shivesh Ratra Total
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

10. If $h(x) = Ax^5 + B\sin x + C\ln\left(\frac{1+x}{1-x}\right) + 7$, where A, B, C are non-zero real constants and $h\left(\frac{-1}{2}\right) = 6$, then find the value of $h\left(\frac{\operatorname{sgn}(e^{-x})}{2}\right)$.

Daily Work Sheet-4

SINGLE CORRECT TYPE

3. If $f: \mathbb{R} \rightarrow \mathbb{R}$ is a function defined by $f(x) = [x] \cos \pi \left(\frac{x^2-1}{2} \right)$, where $[x]$ denotes the greatest integer function, then f is : **[AIEEE 2012]**
- (A) continuous only at $x = 0$.
 (B) continuous for every real x .
 (C) discontinuous only at $x = 0$.
 (D) discontinuous only at non-zero integral values of x .
1. If the equation $(p^2 - 4)(p^2 - 9)x^3 + \left[\frac{p-4}{2}\right]x^2 + (p-4)(p^2 - 5p + 6)x + \{2p - 1\} = 0$ is satisfied by all values of x in $(0, 3]$ then sum of all possible integral values of 'p' is
- (A) 0 (B) 5 (C) 9 (D) 10
21. Let $A = \{x \in \mathbb{R} : x \text{ is not a positive integer}\}$. Define a function $f: A \rightarrow \mathbb{R}$ as $f(x) = \frac{2x}{x-1}$, then f is **[JEE - Main 2019]**
- (A) injective but not surjective (B) not injective
 (C) surjective but not injective (D) neither injective nor surjective

12. (i) Write explicitly, functions of y defined by the following equations and also find the domains of definition of the given implicit functions :
- (a) $10^x + 10^y = 10$
 (b) $x + |y| = 2y$
- (ii) The function $f(x)$ is defined on the interval $[0,1]$. Find the domain of definition of the functions.
- (a) $f(\sin x)$ (b) $f(2x + 3)$
- (iii) Given that $y = f(x)$ is a function whose domain is $[4,7]$ and range is $[-1,9]$. Find the range and domain of
- (a) $g(x) = \frac{1}{3}f(x)$
 (b) $h(x) = f(x - 7)$

Atomic Structure:

12. The maximum number of electrons that can have principal quantum number, $n=3$, and spin quantum number, $m_s = -1/2$, is [JEE 2011]
8. A single electron is revolving orbits a round nucleus a stationary ($z = 5$). The energy required to excite the electron from the third to the fourth Bohr orbit will be :-
 (A) 4.5 eV (B) 8.53 eV (C) 25 eV (D) 16.53 eV
60. The wavelength of an electron of kinetic energy 4.50×10^{-29} J is _____ $\times 10^{-5}$ m.
 (Nearest integer) [JEE Main (April) 2023]
 Given: Mass of electron is 9×10^{-31} kg, $h = 6.6 \times 10^{-34}$ Js
- Ans. 7

15. The atomic masses of He and Ne are 4 and 20 a.m.u. respectively. The value of the de Broglie wavelength of He gas at -73°C is "M" times that of the de Broglie wavelength of Ne at 727°C . M is. [JEE 2013]

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24. The de Broglie wavelength of a car of mass 1000 kg and velocity 36 km/hr is :
($h = 6.63 \times 10^{-34} \text{ Js}$) [JEE-Main(online) 2013]
(1) $6.626 \times 10^{-31} \text{ m}$ (2) $6.626 \times 10^{-34} \text{ m}$ (3) $6.626 \times 10^{-38} \text{ m}$ (4) $6.626 \times 10^{-30} \text{ m}$
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