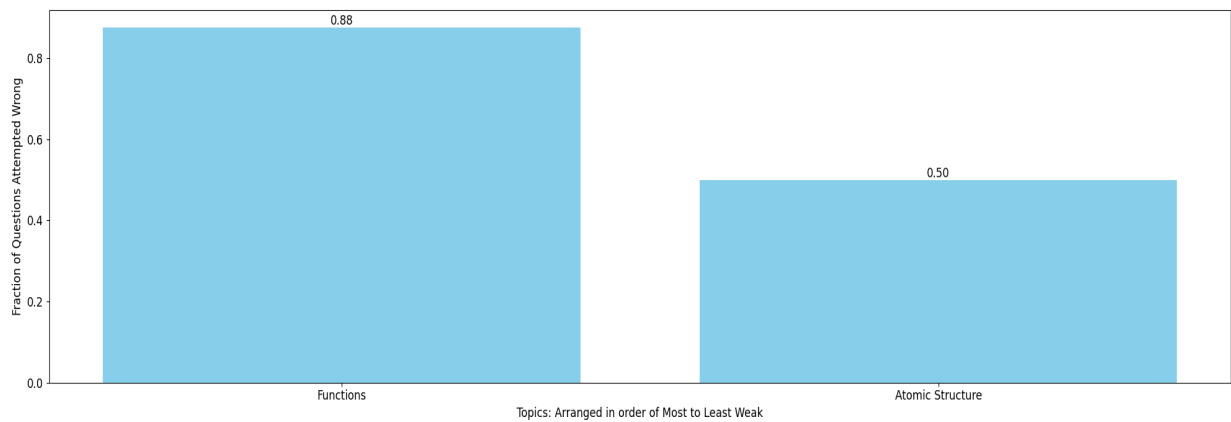


Shiva gahlod Total
MLAssist - Personalised DPP

Question Paper Analysis:



Weak Topic Analysis:



Practice Questions:

Functions:

8. Let $f(x) = (x+1)(x+2)(x+3)(x+4) + 5$ where $x \in [-6, 6]$. If the range of the function is $[a, b]$ where $a, b \in \mathbb{N}$ then find the value of $(a+b)$.
8. If $F(n+1) = \frac{F(n)+1}{2}$, $n = 2, \dots, 8$, $F(1) = 2$ then $\frac{F(101)}{26}$ equals
8. Find the formula for the function $f \circ g \circ h$, given $f(x) = \frac{x}{x+1}$; $g(x) = x^{10}$ and $h(x) = x+3$. Find also the domain of this function. Also compute $(f \circ g \circ h)(-1)$.
1. Find the domains of definitions of the following functions :
- (Read the symbols $[*]$ and $\{*\}$ as greatest integers and fractional part functions respectively.)
- (i) $f(x) = \sqrt{\cos 2x} + \sqrt{16-x^2}$
- (ii) $f(x) = \log_7 \log_5 \log_3 \log_2 (2x^3 + 5x^2 - 14x)$
- (iii) $f(x) = \ln (\sqrt{x^2 - 5x - 24} - x - 2)$
- (iv) $f(x) = \sqrt{\frac{1-5x}{7-x-7}}$
- (v) $y = \log_{10} \sin (x-3) + \sqrt{16-x^2}$
- (vi) $f(x) = \log_{100x} \left(\frac{2\log_{10} x + 1}{-x} \right)$
- (vii) $f(x) = \sqrt{x^2 - |x|} + \frac{1}{\sqrt{9-x^2}}$
- (viii) $f(x) = \sqrt{(x^2 - 3x - 10) \cdot \ln^2 (x-3)}$ (ix) $f(x) = \sqrt{(5x - 6 - x^2)[\{\ln \{x\}\}]} + \sqrt{(7x - 5 - 2x^2)} + \left(\ln \left(\frac{7}{2} - x \right) \right)^{-1}$
- (x) $f(x) = \log_{\left[x+\frac{1}{x}\right]} |x^2 - x - 6| + {}^{16-x}C_{2x-1} + {}^{20-3x}P_{2x-5}$

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 $52 - 10 f(10)$ is equal to _____. [JEE - Main 2021]

Atomic Structure:

18. The binding energy of e^- in ground state of hydrogen atom is 13.6 eV. The energies required to eject out an electron from three lowest states of He^+ ion will be – (in eV)
(A) 13.6, 10.2, 3.4 (B) 13.6, 3.4, 1.5 (C) 13.6, 27.2, 40.8 (D) 54.4, 13.6, 6
13. The ionization enthalpy of hydrogen atom is $1.312 \times 10^6 \text{ J mol}^{-1}$. The energy required to excite the electron in the atom from $n=1$ to $n=2$ is [AIEEE-2008]
(1) $8.51 \times 10^5 \text{ J mol}^{-1}$ (2) $6.56 \times 10^5 \text{ J mol}^{-1}$ (3) $7.56 \times 10^5 \text{ J mol}^{-1}$ (4) $9.84 \times 10^5 \text{ J mol}^{-1}$
49. The difference between the radii of 3rd and 4th orbits of Li^{2+} is ΔR_1 . The difference between the radii of 3rd and 4th orbits of He^+ is ΔR_2 . Ratio $\Delta R_1 : \Delta R_2$ is: [JEE Main (April) 2020]
(1) 8 : 3 (2) 3 : 8
(3) 3 : 2 (4) 2 : 3
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) $3 \left(\frac{h}{2\pi} \right)$

35. Which of the graphs shown below does not represent the relationship between incident light and the electron ejected from metal surface? [JEE Main (Jan.) 2019]

