

MHT CET 2026 Mathematics Memory Based Question paper PDF

Chemistry

- Which of the following pairs contains only intensive properties?
 - Mass, Volume
 - Density, Temperature
 - Volume, Pressure
 - Mass, Density
- Which compound undergoes Cannizzaro reaction?
 - CH_3CHO
 - $\text{C}_6\text{H}_5\text{CHO}$
 - CH_3COCH_3
 - $\text{CH}_3\text{CH}_2\text{OH}$
- The relation between molar conductivity Λ_m , conductivity κ , and concentration C of an electrolyte solution is:
 - $\Lambda_m = \frac{\kappa}{1000C}$
 - $\Lambda_m = \frac{C}{\kappa \times 1000}$
 - $\Lambda_m = \frac{\kappa \times 1000}{C}$
 - $\Lambda_m = \kappa C$
- If the concentration of an electrolyte solution decreases, the molar conductivity Λ_m will:
 - Decrease
 - Increase
 - Remain same
 - Become zero
- A metal has BCC structure. Atomic radius = 173 pm and molar mass $M = 56 \text{ g mol}^{-1}$. The density of the metal is:
 - 7.2 g cm^{-3}
 - 5.6 g cm^{-3}
 - 8.5 g cm^{-3}
 - 3.2 g cm^{-3}

Mathematics

6. Evaluate the integral:

$$\int_1^4 \left(\frac{1}{\sqrt{x}} + \frac{1}{\sqrt{e^x}} \right) dx$$

- (a) $3 + \frac{2}{\sqrt{e}} - \frac{2}{e^2}$
- (b) $2 + \frac{2}{\sqrt{e}} - \frac{2}{e^2}$
- (c) $2 + \frac{2}{e} - \frac{2}{e^2}$
- (d) $3 + \frac{2}{e} - \frac{2}{e^2}$

7. Evaluate the integral:

$$\int \frac{x+1}{x(1+xe^x)^2} dx$$

- (a) $\frac{1}{1+xe^x} + C$
- (b) $-\frac{1}{1+xe^x} + C$
- (c) $\ln(1+xe^x) + C$
- (d) $\frac{xe^x}{1+xe^x} + C$

8. If $h(x) = \sqrt{4f(x) + 3g(x)}$, $f(1) = 4$, $g(1) = 3$, $f'(1) = 3$, $g'(1) = 4$, then $h'(1)$ is equal to:

- (a) $-\frac{5}{12}$
- (b) $-\frac{12}{7}$
- (c) $\frac{5}{12}$
- (d) $\frac{12}{5}$

9. If $y = \sin^{-1} \left(\frac{5x+12\sqrt{1-x^2}}{13} \right)$, then $\frac{dy}{dx}$ is equal to:

- (a) $\frac{1}{\sqrt{1-x^2}}$
- (b) $\frac{2}{\sqrt{1-x^2}}$
- (c) $-\frac{1}{\sqrt{1-x^2}}$
- (d) $-\frac{x}{\sqrt{1-x^2}}$

10. Evaluate the integral:

$$\int \frac{4x^2 \cot^{-1}(x^3)}{1+x^6} dx$$

- (a) $-\frac{2}{3}(\cot^{-1} x^3) + C$
- (b) $\frac{2}{3}(\cot^{-1} x^3) + C$
- (c) $-\frac{2}{3}(\cot^{-1} x^3)^2 + C$
- (d) $\frac{2}{3}(\cot^{-1} x^3)^2 + C$

11. Evaluate the integral:

$$\int_0^{\pi/2} \frac{dx}{1 + (\cot x)^{101}}$$

- (a) $\frac{\pi i}{2}$
- (b) $\frac{\pi}{4}$
- (c) $\frac{\pi}{8}$
- (d) π