

MHT CET 2026 Mathematics Answer Key PDF

Mathematics

1. Option (a) $8\sqrt{3}$

Explanation: The required area is bounded symmetrically by the parabola $y^2 = 4x$ and the line $x = 3$. Integrating from 0 to 3 yields the area $2 \int_0^3 2\sqrt{x} dx = 4 \left[\frac{2}{3} x^{3/2} \right]_0^3 = 8\sqrt{3}$.

2. Option (b) -4

Explanation: For three vectors to be coplanar, their scalar triple product (the determinant formed by their coefficients) must equal zero. Setting up the determinant equation and solving for a gives $7a + 28 = 0 \implies a = -4$.

3. Option (a) $y \sin x = x + c$

Explanation: This is a linear differential equation with an integrating factor I.F. $= e^{\int \cot x dx} = \sin x$. The general solution is given by $y \cdot \sin x = \int \csc x \cdot \sin x dx + c = x + c$.

4. Option (a) $\frac{405}{1024}$

Explanation: Using the binomial probability formula $P(X = r) = \binom{n}{r} p^r q^{n-r}$ with $n = 5$, $r = 4$, $p = 3/4$, and $q = 1/4$, we calculate the probability as $\binom{5}{4} \left(\frac{3}{4}\right)^4 \left(\frac{1}{4}\right)^1 = \frac{405}{1024}$.

5. Option (c) 3

Explanation: For the function to be continuous at $x = 0$, the limit of $f(x)$ as $x \rightarrow 0$ must equal $f(0)$. Since $\lim_{x \rightarrow 0} \frac{k \sin x}{x} = k(1) = k$, equating this to $f(0) = 3$ yields $k = 3$.

Physics

6. Option (c) 20 m/s

Explanation: Using the third kinematic equation of motion, $v^2 = u^2 + 2as$ with $u = 0$, $a = 10 \text{ m/s}^2$, and $s = 20 \text{ m}$, we obtain the velocity just before impact as $v = \sqrt{2 \times 10 \times 20} = 20 \text{ m/s}$.

7. Option (b) $1.227 \text{ \AA}$

Explanation: The de Broglie wavelength of an electron accelerated through a potential difference V is given by $\lambda = \frac{12.27}{\sqrt{V}} \text{ \AA}$. For $V = 100 \text{ V}$, this simplifies to $\lambda = \frac{12.27}{10} = 1.227 \text{ \AA}$.

8. Option (b) 4 : 9

Explanation: The surface area of a spherical soap bubble is directly proportional to the square of its radius, $A \propto r^2$. Therefore, if the radii are in the ratio 2 : 3, their surface areas are in the ratio $2^2 : 3^2 = 4 : 9$.

9. Option (b) 1 H

Explanation: According to Faraday's law of electromagnetic induction, the average induced electromotive force is $|e| = L \frac{|\Delta i|}{\Delta t}$. Substituting the given values, we get $30 = L \frac{|2-5|}{0.1} \implies L = 1 \text{ H}$.

10. Option (a) 0.0125 J

Explanation: The electric potential energy stored in a charged capacitor is given by the formula $U = \frac{1}{2} CV^2$. Substituting $C = 10 \times 10^{-6} \text{ F}$ and $V = 50 \text{ V}$ yields $U = \frac{1}{2} (10 \times 10^{-6}) (2500) = 0.0125 \text{ J}$.

Chemistry

11. Option (b) 4

Explanation: In a Face-Centered Cubic (FCC) lattice, there are 8 corner atoms sharing $1/8$ of their volume and 6 face-centered atoms sharing $1/2$ of their volume, resulting in a total of $8(1/8) + 6(1/2) = 4$ atoms per unit cell.

12. Option (b) Ethene (Ethylene)

Explanation: Reaction of ethyl bromide with alcoholic KOH undergoes a β -elimination (dehydrohalogenation) reaction. This process selectively removes hydrogen and bromine atoms from adjacent carbons, yielding ethene as the major product.

13. Option (d) sp^3d^2

Explanation: The sulfur atom in sulfur hexafluoride (SF_6) forms six single covalent bonds with fluorine atoms and has zero lone pairs. This steric number of 6 corresponds to an octahedral geometry with sp^3d^2 hybridization.

14. Option (b) 2.46 atm

Explanation: The osmotic pressure is determined using the relation $\pi = CRT$. Substituting $C = 0.1$ M, gas constant $R = 0.0821$ L atm mol $^{-1}$ K $^{-1}$, and temperature $T = 300$ K yields $\pi = 2.463$ atm.

15. Option (c) Finely divided Iron (Fe) with Molybdenum (Mo) as a promoter

Explanation: In Haber's process for the manufacture of ammonia, finely divided iron acts as the catalyst to increase the rate of reaction, while molybdenum is added as a promoter to enhance catalytic activity.