

MHT CET 2026 Mathematics Memory Based Question paper PDF

Mathematics

1. Evaluate the integral:

$$\int \frac{2x}{x^2 - 5x + 4} dx$$

- (a) $\frac{8}{3} \ln |x - 4| - \frac{2}{3} \ln |x - 1| + C$
- (b) $\frac{2}{3} \ln |x - 1| - \frac{8}{3} \ln |x - 4| + C$
- (c) $2 \ln |x - 1| + \ln |x - 4| + C$
- (d) $\ln |x^2 - 5x + 4| + C$

2. For the curve $y = 3x^3 - 3x^2 + 1$ at $x = 1$, find the equation of the tangent.

- (a) $y = 3x - 2$
- (b) $y = 3x - 3$
- (c) $y = 3x - 1$
- (d) $y = x + 1$

3. Find the general solution for x if $\cos 4x = \cos 3x$.

- (a) $x = 2n\pi$
- (b) $x = \frac{2n\pi}{7}$
- (c) $x = \frac{2n\pi}{7}, 2n\pi$
- (d) $x = \frac{n\pi}{7}$

4. Evaluate the integral:

$$\int \frac{x}{x+2} dx$$

- (a) $x - 2 \ln |x + 2| + C$
- (b) $x + 2 \ln |x + 2| + C$
- (c) $x - \ln |x + 2| + C$
- (d) $\ln |x + 2| + C$

5. If A, B, C are vertices of a triangle with position vectors $\vec{a}, \vec{b}, \vec{c}$, find the position vector of the point D where the angle bisector from vertex A meets BC .

- (a) $\frac{\vec{b} + \vec{c}}{2}$
- (b) $\frac{|\vec{AC}|\vec{b} + |\vec{AB}|\vec{c}}{|\vec{AB}| + |\vec{AC}|}$
- (c) $\frac{|\vec{AB}|\vec{b} + |\vec{AC}|\vec{c}}{|\vec{AB}| + |\vec{AC}|}$
- (d) $\frac{\vec{a} + \vec{b} + \vec{c}}{3}$

Physics

6. A particle starts oscillating simple harmonically from its mean position with time period T ; find the ratio of potential energy to kinetic energy at time $t = \frac{T}{6}$.
- (a) $\frac{1}{3}$
(b) 3
(c) $\frac{1}{2}$
(d) 1
7. Calculate the percentage increase in apparent frequency for an observer moving towards a stationary sound source with $\frac{1}{5}$ th the velocity of sound.
- (a) 10%
(b) 20%
(c) 25%
(d) 30%
8. Find the ratio of fundamental frequencies f_1/f_2 for a pipe open at both ends when $\frac{1}{3}$ of its length is later submerged in water.
- (a) $\frac{3}{2}$
(b) 2
(c) $\frac{4}{3}$
(d) $\frac{3}{4}$
9. A car starts from rest and accelerates uniformly at 3 m/s^2 ; determine its velocity after 5 seconds.
- (a) 10 m/s
(b) 15 m/s
(c) 20 m/s
(d) 25 m/s
10. Find the acceleration of a 2 kg block acted upon by a net force of 10 N.
- (a) 2 m/s^2
(b) 5 m/s^2
(c) 10 m/s^2
(d) 20 m/s^2

Chemistry

11. Identify the product formed when $\text{CH}_3 - \text{CH}_2 - \text{Br}$ reacts with alcoholic KOH.
- (a) $\text{CH}_3\text{CH}_2\text{OH}$
(b) $\text{CH}_2 = \text{CH}_2$
(c) CH_3CHO
(d) CH_3COOH
12. What is the oxidation state of oxygen in peroxides?
- (a) -2

- (b) -1
 - (c) 0
 - (d) $+1$
13. Identify the specific reagent used in the Swarts reaction (e.g., AgF or SbF_3).
- (a) AgCl
 - (b) SbF_3
 - (c) FeCl_3
 - (d) HCl
14. Which of the following is a disproportionation reaction: Clemmensen, Wolff–Kishner, or Cannizzaro?
- (a) Clemmensen reaction
 - (b) Wolff–Kishner reaction
 - (c) Cannizzaro reaction
 - (d) None of these
15. Predict the product when an alcohol reacts with sodium metal.
- (a) Alkane
 - (b) Sodium alkoxide + Hydrogen gas
 - (c) Ether
 - (d) Aldehyde