

MHT CET 2026 Mathematics Memory Based Question paper PDF

Mathematics

1. Evaluate the integral:

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

- (a) $x - 2 \log |x + 2| + C$
 - (b) $x + 2 \log |x + 2| + C$
 - (c) $\log |x + 2| + C$
 - (d) $\frac{x^2}{2(x+2)} + C$
2. Find the value of k if the function $f(x) = k \sin x + 2 \cos x$ is increasing for all x .
- (a) Possible for some k
 - (b) $k > 2$
 - (c) Impossible for all $x \in \mathbb{R}$
 - (d) $k = 2$
3. Calculate $y(\log 2)$ if $\frac{dy}{dx} = y + 5$ and $y(0) = 4$.
- (a) 12
 - (b) 13
 - (c) 14
 - (d) 15
4. Identify the co-ordinates of the point where the line joining $(1, 1, 1)$ and $(2, 2, 2)$ intersects the plane $x + y + z = 9$.
- (a) $(2, 2, 2)$
 - (b) $(3, 3, 3)$
 - (c) $(4, 4, 4)$
 - (d) $(1, 1, 1)$

Physics

5. A ball is thrown upwards with a velocity of 20 m/s; find the maximum height reached ($g = 10 \text{ m/s}^2$).
- (a) 10 metres
 - (b) 20 metres
 - (c) 30 metres
 - (d) 40 metres

6. Calculate the ratio of potential energy to kinetic energy at time $t = \frac{T}{6}$ for a particle starting SHM from its mean position.
- (a) 1 : 1
 - (b) 3 : 1
 - (c) 1 : 3
 - (d) 3 : 2
7. Find the work done by a gas that expands from 0.2 dm^3 to 0.8 dm^3 against a constant pressure of 2 bar.
- (a) -120 J
 - (b) 120 J
 - (c) -60 J
 - (d) 60 J
8. Calculate the radius of a circular path for an electron moving through a magnetic field $B = 12 \times 10^{-4} \text{ T}$ with $v = 3.2 \times 10^7 \text{ m/s}$.
- (a) 0.05 m
 - (b) 0.10 m
 - (c) 0.15 m
 - (d) 0.20 m

Chemistry

9. Identify the reagent used in the Lucas test to distinguish between primary, secondary, and tertiary alcohols.
- (a) Dilute HCl and ZnCl_2
 - (b) Conc. HCl and anhydrous ZnCl_2
 - (c) H_2SO_4 and ZnCl_2
 - (d) Conc. HNO_3 and ZnCl_2
10. Calculate the number of carbon atoms present in 0.35 mole of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$).
- (a) 1.26×10^{23}
 - (b) 1.26×10^{24}
 - (c) 2.10×10^{24}
 - (d) 3.50×10^{23}
11. Determine the hybridization and geometry of carbon in ethyne (C_2H_2).
- (a) sp^3 , Tetrahedral
 - (b) sp^2 , Trigonal planar
 - (c) sp , Linear
 - (d) sp^3d , Trigonal bipyramidal
12. Find the volume occupied by 8 g of a gas at STP if its vapour density is 16.
- (a) 2.8 L
 - (b) 5.6 L

- (c) 11.2 L
 - (d) 22.4 L
13. Identify the most stable carbocation among primary, secondary, and tertiary.
- (a) Primary carbocation
 - (b) Secondary carbocation
 - (c) Tertiary carbocation
 - (d) All are equally stable

