

MHT CET 2026 Mathematics Memory Based Question paper PDF

Mathematics

1. Find the value of k if the function $f(x) = \frac{k \cos x}{\pi - 2x}$ is continuous at $x = \frac{\pi}{2}$.
 - (a) 1
 - (b) 2
 - (c) $\frac{\pi}{2}$
 - (d) π
2. If $\vec{a} = 2\hat{i} - \hat{j} + \hat{k}$ and $\vec{b} = \hat{i} + 2\hat{j} - 3\hat{k}$, find the unit vector perpendicular to both $\vec{a}$ and $\vec{b}$.
 - (a) $\frac{1}{3}(\hat{i} + \hat{j} + \hat{k})$
 - (b) $\frac{1}{3}(\hat{i} - \hat{j} + \hat{k})$
 - (c) $\frac{1}{3}(\hat{i} + \hat{j} - \hat{k})$
 - (d) $\frac{1}{3}(-\hat{i} - \hat{j} - \hat{k})$
3. Evaluate the integral:
$$\int_0^{\pi/2} \frac{\sin^n x}{\sin^n x + \cos^n x} dx$$
 - (a) 0
 - (b) $\frac{\pi}{4}$
 - (c) $\frac{\pi}{2}$
 - (d) π
4. Find the area of the region bounded by the parabola $y^2 = 4ax$ and its latus rectum.
 - (a) $\frac{4a^2}{3}$
 - (b) $\frac{8a^2}{3}$
 - (c) $\frac{16a^2}{3}$
 - (d) $\frac{32a^2}{3}$
5. Identify the truth value of the statement pattern $(p \wedge \sim q) \rightarrow r$.
 - (a) Tautology
 - (b) Contradiction
 - (c) Contingency
 - (d) None of these

Physics

6. Calculate the moment of inertia of a uniform ring of mass M and radius R about a tangent in its own plane.
- (a) MR^2
 - (b) $2MR^2$
 - (c) $\frac{3}{2}MR^2$
 - (d) $\frac{5}{2}MR^2$
7. A capillary tube of radius r is dipped in water; find the height h to which water rises if the surface tension is T .
- (a) $\frac{T}{\rho g r}$
 - (b) $\frac{2T}{\rho g r}$
 - (c) $\frac{4T}{\rho g r}$
 - (d) $\frac{T}{2\rho g r}$
8. Find the ratio of the de Broglie wavelengths of a proton and an alpha particle accelerated through the same potential difference.
- (a) 1 : 2
 - (b) 2 : 1
 - (c) 1 : 1
 - (d) $2\sqrt{2}$
9. Determine the energy of a photon in eV if its wavelength is 4000 Å.
- (a) 3.1 eV
 - (b) 2.5 eV
 - (c) 1.55 eV
 - (d) 4.2 eV
10. In a Young's Double Slit Experiment, find the fringe width if the distance between slits is doubled and the screen distance is halved.
- (a) Fringe width becomes half
 - (b) Fringe width becomes one-fourth
 - (c) Fringe width remains unchanged
 - (d) Fringe width becomes double

Chemistry

11. What is the IUPAC name for the compound $\text{CH}_3 - \text{CH}(\text{OH}) - \text{CH}_2 - \text{CHO}$?
- (a) 3-hydroxybutanal
 - (b) 2-hydroxybutanal
 - (c) 4-hydroxybutanal
 - (d) 1-hydroxybutanal
12. Calculate the spin-only magnetic moment of a Mn^{2+} ion (Atomic number = 25).

- (a) 3.87 BM
 - (b) 4.90 BM
 - (c) 5.92 BM
 - (d) 6.93 BM
13. Which of the following polymers is prepared by condensation polymerization: Nylon-6,6 or Polythene?
- (a) Polythene
 - (b) Nylon-6,6
 - (c) Both
 - (d) None of these
14. Find the oxidation state of Phosphorus in H_3PO_4 and H_3PO_3 .
- (a) +5 and +3
 - (b) +3 and +5
 - (c) +4 and +3
 - (d) +5 and +4
15. Identify the major product formed when phenol reacts with bromine water.
- (a) Bromobenzene
 - (b) 2,4,6-tribromophenol
 - (c) o-bromophenol
 - (d) p-bromophenol