

MHT CET 2026 Mathematics Memory Based Question paper PDF

Mathematics

1. The value of $\tan^{-1}(\sqrt{3}) + \sec^{-1}(-2) - \sin^{-1}\left(-\frac{1}{2}\right)$ is
 - (a) $\frac{\pi}{2}$
 - (b) $\frac{7\pi}{6}$
 - (c) $\frac{2\pi}{3}$
 - (d) $\frac{5\pi}{6}$
2. If the statement $(p \wedge q) \rightarrow (r \vee \neg s)$ is False (F), then the truth values of p, q, r and s are respectively
 - (a) T, T, F, T
 - (b) T, F, T, F
 - (c) F, F, T, T
 - (d) T, T, T, F
3. In $\triangle ABC$, if $2a^2 = b^2 + c^2$, then the value of $\frac{\cos 3A}{\cos A} + 2$ is
 - (a) 0
 - (b) 1
 - (c) 2
 - (d) 3
4. In $\triangle ABC$, $(b - c)^2 \cos^2 \frac{A}{2} + (b + c)^2 \sin^2 \frac{A}{2} =$
 - (a) a
 - (b) a^2
 - (c) $b^2 + c^2$
 - (d) $2a^2$
5. If $\frac{dy}{dx} = y + 5$ and $y(0) = 4$, then $y(\log 2)$ is equal to
 - (a) 13
 - (b) 15
 - (c) 18
 - (d) 9
6. The coordinates of the foot of the perpendicular from the origin to the plane $2x - 3y - 6z = 4$ are
 - (a) $\left(\frac{8}{49}, -\frac{12}{49}, -\frac{24}{49}\right)$
 - (b) $\left(\frac{2}{7}, -\frac{3}{7}, -\frac{6}{7}\right)$
 - (c) $\left(\frac{8}{7}, -\frac{12}{7}, -\frac{24}{7}\right)$
 - (d) $\left(\frac{4}{49}, -\frac{6}{49}, -\frac{12}{49}\right)$

7. The solution of the differential equation $\frac{dy}{dx} = \frac{x+y}{x-y}$ is

- (a) $\tan^{-1} \left(\frac{y}{x} \right) = \log \sqrt{x^2 + y^2} + C$
- (b) $\tan^{-1} \left(\frac{x}{y} \right) = \log(x + y) + C$
- (c) $x^2 + y^2 = C(x + y)$
- (d) $y = x \tan(\log x + C)$

Chemistry

8. The monomer used to prepare Orlon is

- (a) Vinyl chloride
- (b) Tetrafluoroethylene
- (c) Acrylonitrile
- (d) Styrene

9. Identify the product when a ketone reacts with hydrazine ($\text{NH}_2 - \text{NH}_2$)

- (a) Oxime
- (b) Hydrazone
- (c) Semicarbazone
- (d) Phenylhydrazone

10. Which of the following reagents is used to prepare alkyl isocyanides from alkyl halides (RX)?

- (a) KCN (alc.)
- (b) AgCN (alc.)
- (c) NaCN (aq.)
- (d) HCN

11. Which of the following aqueous solutions will show maximum vapour pressure at 300 K?

- (a) 0.1 M Glucose
- (b) 0.1 M NaCl
- (c) 0.1 M CaCl_2
- (d) 0.1 M AlCl_3