

MHT CET 2026 May 13 Shift 2

Question Paper (Memory-Based)

Conducted by CET Cell, Maharashtra



General Instructions

- (i) **Duration:** The total duration of the examination is 3 hours (180 minutes).
- (ii) **Total Marks:** The complete paper carries a maximum of 200 marks.
- (iii) **Structure:** The paper has 3 Sections:
 - **Section A:** 50 Multiple Choice Questions (Physics).
 - **Section B:** 50 Multiple Choice Questions (Chemistry).
 - **Section B:** 100 Multiple Choice Questions (Mathematics).
- (iv) **Compulsory Questions:** All 200 questions are compulsory.
- (v) Each question has four options. Only **one** option is correct.
- (vi) **Correct Answer:** +1 marks.
- (vii) **Incorrect Answer:** (No Negative marking).
- (viii) **Unanswered/Marked for Review:** 0 marks.

1. If $I = \int \frac{\sin x + \sin^3 x}{\cos 2x} dx = P \cos x + Q \log \left| \frac{\sqrt{2} \cos x - 1}{\sqrt{2} \cos x + 1} \right| + C$, then the values of P and Q are respectively:

- (A) $\frac{1}{2}, \frac{3}{4\sqrt{2}}$
- (B) $\frac{1}{2}, \frac{-3}{4\sqrt{2}}$
- (C) $\frac{1}{2}, \frac{3}{2\sqrt{2}}$
- (D) $\frac{1}{2}, \frac{-3}{2\sqrt{2}}$

2. In a triangle $\triangle ABC$, if a, b , and c are in arithmetic progression, then $\cos A + 2 \cos B + \cos C =$

- (A) 1
(B) 2
(C) $\frac{3}{2}$
(D) $\sqrt{3} + 1$
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3. If the area of triangle ABC is $b^2 - (c - a)^2$, then $\tan B =$

- (A) 1
(B) $\frac{13}{15}$
(C) $\frac{1}{4}$
(D) $\frac{8}{15}$
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4. In a $\triangle ABC$, $a = 1$, $b = \sqrt{3}$ and $\angle C = \frac{\pi}{6}$. Then the measure of the third side $c =$

- (A) 4
(B) 3
(C) 1
(D) 2
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5. The integral $\int \frac{1}{\sqrt[4]{(x-1)^3(x+2)^5}} dx$ is equal to: (where C is a constant of integration)

- (A) $\frac{3}{4} \left(\frac{x+2}{x-1} \right)^{1/4} + C$
(B) $\frac{3}{4} \left(\frac{x+2}{x-1} \right)^{5/4} + C$
(C) $\frac{4}{3} \left(\frac{x-1}{x+2} \right)^{1/4} + C$
(D) $\frac{4}{3} \left(\frac{x-1}{x+2} \right)^{5/4} + C$
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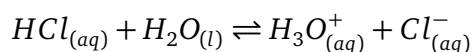
6. Calculate the pH of 0.02 M monobasic acid having 2% dissociation.

- (A) 3.4
(B) 4.5
(C) 5.1
(D) 5.8
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7. What is the pH of 2×10^{-3} M solution of monoacidic weak base if it ionises to the extent of 5%?

- (A) 14
 - (B) 6
 - (C) 4
 - (D) 2
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8. Identify base₂ for the following equation according to Brønsted–Lowry theory:



- (A) $H_3O^+_{(aq)}$
 - (B) $H_2O_{(l)}$
 - (C) $Cl^-_{(aq)}$
 - (D) $HCl_{(aq)}$
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9. Calculate the pH of 0.01 M sulphuric acid.

- (A) 1.699
 - (B) 2.00
 - (C) 0.699
 - (D) 3.398
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10. What is the pH of a weak dibasic acid that is 2% dissociated in its M/100 solution at 298 K?

- (A) 1.6990
 - (B) 2.3979
 - (C) 3.3970
 - (D) 4.6990
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11. An open pipe resonates with a tuning fork of frequency 500 Hz. It is observed that two

successive nodes are separated by 34 cm. The velocity of sound in air is:

- (A) 330 m/s
 - (B) 340 m/s
 - (C) 350 m/s
 - (D) 360 m/s
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12. A train moving at 20 m/s approaches a stationary observer. The frequency of the whistle emitted by the train is 640 Hz. If the velocity of sound is 340 m/s, the apparent frequency heard by the observer is:

- (A) 680 Hz
 - (B) 600 Hz
 - (C) 720 Hz
 - (D) 640 Hz
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13. Unpolarized light of intensity I_0 is incident on two polaroids placed coaxially. The transmission axis of the second polaroid is at an angle of 60° to the first. The intensity of emerging light is:

- (A) $I_0/2$
 - (B) $I_0/4$
 - (C) $I_0/8$
 - (D) $3I_0/8$
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14. A parallel plate capacitor has capacitance C . If a dielectric slab of dielectric constant K and thickness equal to half the plate separation is introduced parallel to the plates, the new capacitance is:

- (A) $\frac{2K}{K+1}C$
 - (B) $\frac{K+1}{2K}C$
 - (C) $\frac{K}{K+1}C$
 - (D) KC
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15. An infinite line charge of uniform linear charge density λ is placed along the z-axis. The work done in moving a charge q from $(a, 0, 0)$ to $(2a, 0, 0)$ is:

- (A) $\frac{q\lambda}{2\pi\epsilon_0} \ln 2$
 - (B) $\frac{q\lambda}{4\pi\epsilon_0} \ln 2$
 - (C) $\frac{q\lambda}{2\pi\epsilon_0} \ln(1/2)$
 - (D) zero
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