# MHT CET 2026 April 15 Shift 1

## Question Paper

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 C:** 50 Multiple Choice Questions (Mathematics)

(iv) **Compulsory Questions:** All 150 questions are compulsory.

(v) Each question has four options. Only **one** option is correct.

(vi) **Right Answer:** +1 marks.

(vii) **Incorrect Answer:** (No Negative marking).

(viii) **Unanswered/Marked for Review:** 0 marks.

## Mathematics

**1. Find the general solution for the trigonometric equation** $\cos 4x = \cos 2x$**.**

(A) $x = n\pi$

(B) $x = \frac{n\pi}{2}$

(C) $x = \frac{n\pi}{3}$

(D) $x = n\pi$ or $x = \frac{n\pi}{3}$

**1. If the vectors $2\hat{i}-\hat{j}+\hat{k},\ \hat{i}+2\hat{j}-3\hat{k}$ and $3\hat{i}+\lambda\hat{j}+5\hat{k}$ are coplanar, find the value of $\lambda$.**

(A) $-2$

(B) 0

(C) 2

(D) 4

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**3. Evaluate the integral $\int \frac{dx}{1+\sin x}$.**

(A) $\tan x + C$

(B) $\sec x + \tan x + C$

(C) $\tan x - \sec x + C$

(D) $\sec x - \tan x + C$

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**4. Find the area of the region bounded by the parabola $y^2 = 4ax$ and its latus rectum.**

(A) $\frac{8a^2}{3}$

(B) $\frac{16a^2}{3}$

(C) $\frac{32a^2}{3}$

(D) $\frac{64a^2}{3}$

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**5. In a binomial distribution, if $n = 6$ and $P(X = 4) = P(X = 2)$, find the probability of success $p$.**

(A) $\frac{1}{2}$

(B) $\frac{1}{3}$

(C) $\frac{2}{3}$

(D) $\frac{1}{4}$

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## Physics

**6. Calculate the radius of gyration of a uniform rod of length $L$ about an axis passing through its center and perpendicular to its length.**

(A) $\frac{L}{\sqrt{12}}$

(B) $\frac{L}{\sqrt{6}}$

(C) $\frac{L}{2\sqrt{3}}$

(D) $\frac{L}{3}$

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**7. In a Young's Double Slit Experiment, find the ratio of maximum to minimum intensity if the ratio of amplitudes of the two waves is $3:2$.**

(A) 25 : 1

(B) 9 : 4

(C) 5 : 1

(D) 13 : 1

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**8. A capacitor of $10\mu F$ is charged to a potential of $50V$; calculate the energy stored in the capacitor.**

(A) $1.25 \times 10^{-2}\,J$

(B) $1.25 \times 10^{-3}\,J$

(C) $2.5 \times 10^{-2}\,J$

(D) $5 \times 10^{-3}\,J$

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**9. Find the equivalent resistance between two opposite corners of a cube where each edge has a resistance $R$.**

(A) $\frac{R}{2}$

(B) $\frac{5R}{6}$

(C) $\frac{5R}{3}$

(D) $\frac{3R}{2}$

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**10. Determine the de Broglie wavelength of an electron accelerated through a potential difference of $100V$.**

(A) $1.227 \times 10^{-10}\,m$

(B) $1.227 \times 10^{-9}\,m$

(C) $1.227 \times 10^{-11}\, m$

(D) $1.227 \times 10^{-8}\, m$

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## Chemistry

**11. Identify the product formed when Phenol reacts with Chloroform in the presence of aqueous $NaOH$ (Reimer–Tiemann reaction).**

(A) Benzaldehyde

(B) Salicylic acid

(C) $o$-Hydroxybenzaldehyde

(D) $p$-Nitrophenol

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**12. Calculate the work done in an isothermal reversible expansion of $2$ moles of an ideal gas from $10L$ to $20L$ at $300K$.**

(A) $3.46 \times 10^3\, J$

(B) $4.32 \times 10^3\, J$

(C) $2.46 \times 10^3\, J$

(D) $5.76 \times 10^3\, J$

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**13. What is the coordination number and oxidation state of the central metal ion in $[Co(en)_2Cl_2]Cl$?**

(A) Coordination number = 4, Oxidation state = +2

(B) Coordination number = 6, Oxidation state = +3

(C) Coordination number = 4, Oxidation state = +3

(D) Coordination number = 6, Oxidation state = +2

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**14. Which element among the 3d series transition metals exhibits the maximum number of oxidation states?**

(A) Iron

(B) Manganese

(C) Chromium

(D) Nickel

**15. Identify the monomer units used in the preparation of Nylon–6,6.**

(A) Hexamethylenediamine and Adipic acid

(B) Ethylene glycol and Terephthalic acid

(C) Caprolactam

(D) Styrene

 