MHT CET 2026 April 17 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 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:** Physics (+1 marks), Chemistry (+1 marks) and Mathematics (+2 marks).

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

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

1. Find the area of the region bounded by the curve $y^2 = 4x$ and the line $x = 3$.

(A) $8\sqrt{3}$

(B) $6\sqrt{3}$

(C) $4\sqrt{3}$

(D) $12\sqrt{3}$

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2. If the vectors $2i - j + k$, $i + 2j - 3k$ and $3i + aj + 5k$ are coplanar, find the value of a.

(A) -2

(B) -4

(C) 2

(D) 4

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3. Find the general solution of the differential equation $\frac{dy}{dx} + y\cot x = \csc x$.

(A) $y\sin x = x + c$

(B) $y\cos x = x + c$

(C) $y\sin x = c - x$

(D) $y\cos x = c + x$

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4. The probability of a shooter hitting a target is $\frac{3}{4}$. Find the probability of hitting the target exactly 4 times in 5 shots.

(A) $\frac{405}{1024}$

(B) $\frac{243}{1024}$

(C) $\frac{405}{512}$

(D) $\frac{81}{256}$

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5. Find the value of k if the function $f(x) = \frac{k\sin x}{x}$ for $x \neq 0$ and $f(0) = 3$ is continuous at $x = 0$.

(A) 1

(B) 2

(C) 3

(D) 4

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6. A stone is dropped from a height of $20\,\text{m}$; calculate its velocity just before it hits the ground ($g = 10\,\text{m/s}^2$).

(A) $10\,\text{m/s}$

(B) $15\,\text{m/s}$

(C) $20\,\text{m/s}$

(D) $25\,\text{m/s}$

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7. Calculate the de Broglie wavelength of an electron accelerated through a potential difference of $100\,\mathrm{V}$.

(A) $0.1227\,\text{Å}$

(B) $1.227\,\text{Å}$

(C) $12.27\,\text{Å}$

(D) $2.27\,\text{Å}$

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8. What is the ratio of the surface area of two soap bubbles if their radii are in the ratio $2:3$?

(A) $2:3$

(B) $4:9$

(C) $3:2$

(D) $9:4$

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9. If the current in a coil changes from $5\,\mathrm{A}$ to $2\,\mathrm{A}$ in $0.1\,\mathrm{s}$ and an average emf of $30\,\mathrm{V}$ is induced, find the self-inductance.

(A) $0.5\,\mathrm{H}$

(B) $1\,\mathrm{H}$

(C) $2\,\mathrm{H}$

(D) $3\,\mathrm{H}$

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10. Find the energy stored in a capacitor of $10\,\mu F$ charged to a potential of $50\,V$.

(A) $0.0125\,J$

(B) $0.025\,J$

(C) $0.125\,J$

(D) $0.25\,J$

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11. Calculate the number of atoms per unit cell in a Face-Centered Cubic (FCC) crystal structure.

(A) 2

(B) 4

(C) 6

(D) 8

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12. Identify the major product formed when Ethyl Bromide reacts with alcoholic KOH.

(A) Ethanol

(B) Ethene (Ethylene)

(C) Diethyl ether

(D) Acetaldehyde

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13. What is the hybridization of the central atom in SF_6 molecule?

(A) sp^3

(B) sp^2

(C) sp^3d

(D) sp^3d^2

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14. Find the osmotic pressure of a $0.1\,M$ glucose solution at $27^\circ C$ ($R = 0.0821\,L\,atm\,mol^{-1}K^{-1}$).

(A) $1.23\,atm$

(B) $2.46\,atm$

(C) $3.46\,atm$

(D) $4.10\,atm$

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15. Name the catalyst used in the manufacture of ammonia by Haber's process.

(A) Nickel

(B) Platinum

(C) Finely divided Iron (Fe) with Molybdenum (Mo) as a promoter

(D) Vanadium pentoxide
