Interactive Practice & Step-by-Step Solutions: Practice chapter-wise PYQs with timer & full explanation on The Crucible.

Open on The Crucible ↗

Electrostatics · **MHT-CET 2025 · 19 April Shift 1** Practice on Crucible ↗

1. Let ' W ' joule be the work done to move an electric charge ' q ' coulomb from a place A, where potential is -5 volt to another place B where potential is ' V ' volt. The value of ' V ' is

(A) $\mathrm{Wq}-5$
(B) $\frac{q}{w}+5$
(C) $w-\frac{5}{q}$
(D) $\frac{w}{q}-5$

Current Electricity — Electric Instruments · **MHT-CET 2025 · 19 April Shift 1** Practice on Crucible ↗

2. If only 5% of the total current is to be passed through galvanometer of resistance G, then the resistance of the shunt will be

(A) $\frac{\mathrm{G}}{15}$
(B) $\frac{\mathrm{G}}{17}$
(C) $\frac{\mathrm{G}}{19}$
(D) $\frac{\mathrm{G}}{21}$

Rotational Motion — Torque · **MHT-CET 2025 · 19 April Shift 1** Practice on Crucible ↗

3. If $\vec{F}=(5\hat{i}-10\hat{j})$ and $\vec{r}=(4\hat{i}-3\hat{j})$, then the torque acting on the object will be

(A) $\hat{\mathrm{i}}-2\hat{\mathrm{j}}$
(B) $2\hat{\mathrm{i}}-\hat{\mathrm{j}}$
(C) $25\hat{\mathrm{k}}$
(D) $-25\hat{\mathrm{k}}$

Thermal Properties of Matter — Radiation · **MHT-CET 2025 · 19 April Shift 1** Practice on Crucible ↗

4. Black sphere of radius R radiates power P at certain temperature T . If the temperature is doubled, the radius gets doubled. Now the power radiated would be

(A) 4 P
(B) 8 P
(C) 16 P
(D) 64 P

Oscillations — Applications of SHM · **MHT-CET 2025 · 19 April Shift 1** Practice on Crucible ↗

5. The time period of a simple pendulum inside a stationary lift is $\sqrt{3}$ second. When the lift moves upwards with an acceleration $\mathrm{g}/3$, the time period will be ($\mathrm{g}=$ acceleration due to gravity)

(A) 1.5 s
(B) 2 s
(C) $\sqrt{3}\,\mathrm{s}$
(D) 3 s

Electromagnetic Induction — Inductance · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

6. When three inductors of same inductance 'L' are connected in series and 'I' is the current passing through the circuit. The energy stored in the circuit is

(A) $\frac{1}{2}\,\mathrm{LI}^2$
(B) $\frac{3}{2}\mathrm{LI}^2$
(C) $\frac{5}{2}\,\mathrm{LI}^2$
(D) $\frac{7}{2}\,\mathrm{LI}^2$

Atomic Physics — Atomic Spectrum · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

7. If ' λ_1 ' and ' λ_2 ' are the wavelengths of the first member of the Balmer and Paschen series, in hydorgen atom respectively, then the ratio of respective frequencies, f_1/f_2, is

(A) $20:7$
(B) $27:5$
(C) $50:9$
(D) 108:7

Waves and Sound — Doppler's Effect · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

8. When source of sound moves towards a stationary observer, the apparent frequency heard by him

(A) increases and wavelength also increases.
(B) increases while wavelength decreases.
(C) remains the same while wavelength decreases.
(D) decreases and wavelength remains the same.

Mechanical Properties of Fluids — Surface tension · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

9. A liquid rises to a height of 2.4 cm in a glass capillary P. Another glass capillary Q having diameter 80\% of capillary P is immersed in the same liquid. The rise of liquid in capillary Q is

(A) $2\cdot 4\ \mathrm{cm}$
(B) $3\cdot 4\ \mathrm{cm}$
(C) 3 cm
(D) $2\cdot 5\ \mathrm{cm}$

Gravitation — Motion of satellite · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

10. Two particles of equal mass ' m ' move in a circle of radius ' r ' under the action of their mutual gravitational attraction. The speed of each particle will be ($\mathrm{G}=$ Universal gravitational constant)

(A) $\sqrt{\frac{Gm}{4r}}$
(B) $\sqrt{\frac{Gm}{r}}$
(C) $\sqrt{\frac{Gm}{2r}}$
(D) $\sqrt{\frac{4\mathrm{Gm}}{\mathrm{r}}}$

Biomolecules · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

11. Identify a side chain (R) group present in serine, an amino acid.

(A) CH_3-
(B) $H_3C-CHOH-$
(C) Me_2CH-
(D) $HO-CH_2-$

Chemical Bonding and Molecular Structure — Polarization · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

12. Which of the following compounds has maximum covalent character?

(A) LiCl
(B) LiI
(C) NaCl
(D) NaI

Solutions · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

13. Calculate the percent dissociation of 0.02 m solution if its freezing point depression is 0.046 K $[K_f$ for water $= 1.86\ K\ kg\ mol^{-1}; n = 2]$

(A) $12 \cdot 3\%$
(B) $23 \cdot 6\%$
(C) 35.00%
(D) $48 \cdot 1\%$

Haloalkanes and Haloarenes — Grignard Reagent · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

14. Identify the compound formed by action of chromyl chloride on toluene in presence of CS_2 and hydrolysed further?

(A) Chlorobenzene
(B) Benzal Chloride
(C) Benzaldehyde
(D) Benzoic acid

Amines · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

15. Which from following compounds has lowest pK_b value?

(A) N -Ethylethanamine
(B) Propan-2-amine
(C) NH_3
(D) Benzenamine

Solid State — Cubic system · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

16. Calculate the volume of unit cell having atomic radius 141.4 pm forming fcc unit cell.

(A) $9.3 \times 10^{-23}\ \text{cm}^3$
(B) $8.1 \times 10^{-23}\ \text{cm}^3$
(C) $6.4 \times 10^{-23}\ \text{cm}^3$
(D) $4.7 \times 10^{-23}\ \text{cm}^3$

Chemical Kinetics — Integrated rate laws · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

17. In a first order reaction concentration of reactant decreases from 20 milli mol dm-3 to 8 milli mol dm-3 in 40 minute, find rate constant of reaction?

(A) 0.011 minute $^{-1}$
(B) 0.023 minute $^{-1}$
(C) 0.032 minute $^{-1}$
(D) 0.041 minute $^{-1}$

Aldehydes and Ketones · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

18. Identify the reagent R used in following reaction. Ketone $\xrightarrow{\text{R}}$ semi carbazone

(A) NH_2OH
(B) $NH_2NHCONH_2$
(C) $NH_2NHC_6H_5$
(D) $NH_2 - NH_2$

Polymers — Classification of Polymers · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

19. Which from following polymers needs peroxide as initiator for preparation?

(A) Nylon 6,6
(B) Polyacrylonitrile
(C) Terylene
(D) Bakelite

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d and f Block Elements — Properties of D-block elements · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

20. Which from following elements is NOT regarded as transition element?

(A) Ni
(B) Fe
(C) Ag
(D) Hg

Three Dimensional Geometry — Plane in Space · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

21. The Cartesian equation of plane through $A(7, 8, 6)$ and parallel to the XY plane is

(A) $z = 7$
(B) $z = 8$
(C) $z = 6$
(D) $z = 4$

Permutation Combination — Arrangement under Constraint · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

22. The number of ways, in which 6 boys and 5 girls can sit at a round table, if no two girls are to sit together, is

(A) 518400
(B) 14400
(C) 86400
(D) 17280

Straight Lines — Coordinate System · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

23. The point of intersection of the diagonals of the rectangle whose sides are contained in the lines $x = 8, x = 10, \mathrm{y} = 11$ and $\mathrm{y} = 12$ is

(A) $\left(\frac{9}{2}, 23\right)$
(B) $\left(9, \frac{23}{2}\right)$
(C) $\left(7, \frac{21}{2}\right)$
(D) $\left(\frac{7}{2}, 21\right)$

Probability · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

24. A box contains 9 tickets numbered 1 to 9 both inclusive. If 3 tickets are drawn from the box one at a time, then the probability that they are alternatively either \{odd, even, odd\} or \{even, odd, even\} is

(A) $\frac{5}{17}$
(B) $\frac{4}{17}$
(C) $\frac{5}{16}$
(D) $\frac{5}{18}$

Limits — Algebraic and Rational Limits · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

25. $\lim_{x \to 3} \frac{(84-x)^{\frac{1}{4}} - 3}{x-3}$ is

(A) $\frac{-1}{108}$
(B) $\frac{-1}{84}$
(C) $\frac{-1}{27}$
(D) $\frac{-1}{4}$

Mathematical Reasoning · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

26. The statement pattern $[(p \to q) \wedge \sim q] \to r$ is a tautology when r is equivalent to

(A) $\mathrm{p} \wedge \sim \mathrm{q}$
(B) $q \vee p$
(C) $\mathrm{p} \wedge \mathrm{q}$
(D) $\sim \mathrm{q}$

Trigonometric Ratios & Identities · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

27. If $3\sin\alpha = 5\sin\beta$, then $\tan\left(\frac{\alpha+\beta}{2}\right) \div \tan\left(\frac{\alpha-\beta}{2}\right) =$

(A) 1
(B) 2
(C) 3
(D) 4

Definite Integration · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

28. The value of $\int_1^4 \log[x]\mathrm{d}x$ where $[x]$ is the greatest integer function less than or equal to x is equal to

(A) $\log 5$
(B) $\log 6$
(C) $\log 2$
(D) $\log 3$

Differential Equations — Order and Degree · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

29. The order and degree of differential equation of all tangent lines to the parabola $x^2 = 4\mathrm{y}$ is respectively.

(A) 1,2
(B) 2,2
(C) 3,1
(D) 4,1

Circle — Common Tangents · MHT-CET 2025 · 19 April Shift 1 Practice on Crucible ↗

30. The number of common tangents that can be drawn to the circles $x^2 + y^2 - 6x = 0$ and $x^2 + y^2 + 6x + 2y + 1 = 0$ is .....

(A) 0
(B) 3
(C) 2
(D) 4

Answer Key (Q1 to Q30)

Click any question number below to practice chapter-wise PYQs on The Crucible ↗

1: (D)	2: (C)	3: (D)	4: (D)	5: (A)	6: (B)	7: (A)	8: (B)	9: (C)	10: (A)
11: (D)	12: (B)	13: (B)	14: (C)	15: (A)	16: (C)	17: (B)	18: (B)	19: (B)	20: (D)
21: (C)	22: (C)	23: (B)	24: (D)	25: (A)	26: (D)	27: (D)	28: (B)	29: (A)	30: (D)

Sample Solution — Question 1 (MHT-CET 2025 · 19 April Shift 1 · Correct Option: D)

Open on The Crucible ↗

Q1. Let ' W ' joule be the work done to move an electric charge ' q ' coulomb from a place A, where potential is -5 volt to another place B where potential is ' V ' volt. The value of ' V ' is

Given physical relation: $P = \frac{x^3 y}{z^2}$, with percentage errors $\frac{\Delta x}{x} \times 100 = 0.6\%$, $\frac{\Delta y}{y} \times 100 = 3\%$, and $\frac{\Delta z}{z} \times 100 = 1.3\%$.

Taking relative maximum error on both sides: $\frac{\Delta P}{P} = 3\left(\frac{\Delta x}{x}\right) + 1\left(\frac{\Delta y}{y}\right) + 2\left(\frac{\Delta z}{z}\right)$.

Substituting the given percentage values: $\%\ \text{error in}\ P = 3(0.6\%) + 3\% + 2(1.3\%) = 1.8\% + 3.0\% + 2.6\% = 7.4\%$.

• **Watch out:** Errors always add up even when a quantity (z^2) is in the denominator—never subtract $2(1.3\%)$!

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Solve on The Crucible ↗