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

Open on The Crucible ↗

Functions — Domain · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

1. If $f(x)=x^3-x$ and $g(x)=\sin 2x$, then $f\left(g\left(\frac{\pi}{12}\right)\right)=$

(A) 0 **(B)** 1

(C) $-\frac{3}{8}$ **(D)** 2

Complex Number — Geometry of Complex Number · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

2. If $z_1=(2,-1)$ and $z_2=(6,3)$, then $\operatorname{amp}\left(\frac{z_1-z_2}{z_1+z_2}\right)=$

(A) $-\frac{3\pi}{4}-\tan^{-1}\left(\frac{1}{4}\right)$ **(B)** $\frac{\pi}{4}\tan^{-1}\left(\frac{1}{4}\right)$

(C) $\frac{3\pi}{4}+\tan^{-1}\left(\frac{1}{4}\right)$ **(D)** $\frac{\pi}{4}+\tan^{-1}\left(\frac{1}{4}\right)$

Quadratic Equation — N degree equation · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

3. If the values of k for which the equation $x^2+2(k+2)x+6\mathrm{k}+7=0$ has equal roots are k_1 and k_2, then $\mathrm{k}_1^2+\mathrm{k}_2^2=$

(A) 8 **(B)** 9

(C) 10 **(D)** 12

Binomial Theorem — Terms of Binomial Expansion · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

4. If the number of diagonals of a regular polygon of n sides is 104 , then $\mathrm{n}=$

(A) 19 **(B)** 16

(C) 13 **(D)** 11

Determinants — Expansion of Determinants · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

5. A team of 5 students is to be selected from 12 students. If two particular students are to be included in that team, then the number of ways that such team can be selected is

(A) 792 **(B)** 180

(C) 120 **(D)** 90

Trigonometric Ratios & Identities — Transformation Formulas · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

6. $\sin 21^\circ \cos 9^\circ - \cos 84^\circ \cos 6^\circ =$

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

Indefinite Integration · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

7. If $\frac{2x^2+5x+6}{(x+2)^3} = \frac{a}{x+2} + \frac{b}{(x+2)^2} + \frac{c}{(x+2)^3}$ then $\mathrm{a.b} + \mathrm{b.c} + \mathrm{c.a} =$

(A) 28
(B) 14
(C) -10
(D) -8

Probability — Independent Events · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

8. In a game, a pair of dice is rolled 24 times. If a person wins the game by not getting 6 on both the dice in any one of the 24 rolls, then the probability that a person wins the game is

(A) $\left(\frac{35}{36}\right)^{24}$
(B) $\left(\frac{17}{18}\right)^{24}$
(C) $\left(\frac{11}{12}\right)^{24}$
(D) $\left(\frac{5}{6}\right)^{24}$

Circle — Pair of Tangents · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

9. The equation of the pair of tangents drawn from the point $(1,1)$ to the circle $x^2+y^2+2x+2y+1=0$ is

(A) $3x^2-8xy+3y^2-2x-2y+6=0$
(B) $11x^2-8xy+11y^2-4x-4y-6=0$
(C) $3x^2-8xy+3y^2+2x+2y-2=0$
(D) $x^2-4xy+y^2+x+y=0$

Ellipse — Director Circle · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

10. Let $x^2+y^2=20$ be the director circle of an ellipse E whose major axis is X-axis and minor axis is Y-axis. If the length of the latus rectum of E is 2 , then the distance between its foci is

(A) $4\sqrt{5}$
(B) $4\sqrt{3}$
(C) $4\sqrt{2}$
(D) 3

Hyperbola — Equation of hyperbola · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

11. If θ is the acute angle between the tangents drawn from the point $(2,3)$ to the hyperbola $5x^2-6y^2-30=0$, then $\tan\theta=$

(A) $\frac{\pi}{4}$ **(B)** $\frac{3}{4}$

(C) $\frac{4}{3}$ **(D)** $\frac{\pi}{2}$

Differentiation — Logarithmic differentiation · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

12. If $f(x)$ is a differentiable function, $f'(x)\geq 5\forall x\in[2,6]$, $f(2)=4$ and $f(3)=15$, then a possible value of $f(6)$

(A) $=24$ **(B)** lies between 4 and 15

(C) ≤ 15 **(D)** $=5$

Units and Dimensions — Units · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

13. Among the following the least unit for length is

(A) parsec **(B)** nanometer

(C) fermi **(D)** angstrom

Motion In One Dimension — Uniform Motion · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

14. The time of flight of a vertically projected stone is $8\ \text{s}$. The position of the stone after $6\ \text{s}$ from the ground is (Acceleration due to gravity $=10\ \text{ms}^{-2}$)

(A) $20\ \text{m}$ **(B)** $60\ \text{m}$

(C) $75\ \text{m}$ **(D)** $40\ \text{m}$

Laws of Motion — Newton's laws of motion · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

15. A car of mass $1500\ \text{kg}$ is moving with $20\ \text{ms}^{-1}$ velocity. If the breaks are applied it comes to rest in 5 seconds, then the retarding force is

(A) $9000\ \text{N}$ **(B)** $6000\ \text{N}$

(C) $12000\ \text{N}$ **(D)** $3000\ \text{N}$

Work Power Energy — Power · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

16. A machine gun fires 300 bullets per minute each with a velocity of $500\ \mathrm{ms}^{-1}$. If the mass of each bullet is $4\ \mathrm{g}$, the power of the machine gun is

(A) $3.6\ \mathrm{kW}$
(B) $3\ \mathrm{kW}$
(C) $5.4\ \mathrm{kW}$
(D) $2.5\ \mathrm{kW}$

Center of Mass Momentum and Collision — Collisions · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

17. A body falls freely from a height of $100\ \mathrm{m}$ on to the ground and rebounds to a maximum height of $36\ \mathrm{m}$ after collision. The coefficient of restitution between ground and the body is

(A) 0.4
(B) 0.36
(C) 0.6
(D) 0.5

Gravitation — Acceleration Due to Gravity · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

18. The value of acceleration due to gravity at a height of $4R_E$ from surface of earth is R_E is radius of earth and acceleration due to gravity on the surface of the earth = $10\ \mathrm{ms}^{-2}$)

(A) $0.2\ \mathrm{ms}^{-2}$
(B) $0.3\ \mathrm{ms}^{-2}$
(C) $0.4\ \mathrm{ms}^{-2}$
(D) $3\ \mathrm{ms}^{-2}$

Thermal Properties of Matter — Calorimetry · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

19. The specific heat capacity of a copper block of mass M is 's'. If the mass of the copper block is doubled, the specific heat capacity will be

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

Mechanical Properties of Solids — Bulk Modulus · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

20. Isothermal bulk modulus of a gas at a pressure P is (γ - ratio of specific heat capacities of the gas)

(A) γ
(B) $\gamma\mathrm{P}$
(C) P
(D) $\frac{\gamma}{P}$

Kinetic Theory of Gases — Pressure and Energy of gas · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

21. A vessel of volume 10 liters is filled with H_2 gas. The total average translational kinetic energy of its molecules is 4.5×10^5 J. The pressure of hydrogen in the vessel is

(A) $3 \times 10^6 \mathrm{Nm}^{-2}$
(B) $30 \times 10^6 \mathrm{Nm}^{-2}$
(C) $30 \times 10^4 \mathrm{Nm}^{-2}$
(D) $3 \times 10^4 \mathrm{Nm}^{-2}$

Structure of Atom — Hydrogen spectrum · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

22. Vijayawada FM radio station broadcasts at frequency of 103.4 MHz. The wavelength of the corresponding radio waves (in m) is

(A) 2.90
(B) 29.0
(C) 9.20
(D) 92.0

Classification of Elements and Periodicity in Properties — Periodic properties · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

23. Identify the pair of elements with the highest and lowest electronegativity respectively

(A) K and Rb
(B) I and F
(C) F and Fr
(D) Fr and Li

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p Block Elements (Group 13 & 14) — Carbon and Its Compounds · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

24. Choose the acidic oxide from the following

(A) CO
(B) GeO
(C) SnO
(D) PbO

Solid State — Properties and Types of Solids · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

25. An example for network solid is

(A) SiO_2
(B) MgO
(C) CaF_2
(D) ZnS

Some Basic Concepts of Chemistry — Concentration terms · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

26. $20\ \text{mL}$ of $0.1\text{M}\ \text{HCl}$ is added to the $30\ \text{mL}$ of $0.1\text{M}\ \text{NaOH}$. To this solution extra $50\ \text{mL}$ of water was added. What is the molarity of the final solution formed?

(A) 0.1M
(B) 0.01M
(C) 0.5M
(D) 0.05M

General Principles and Processes of Isolation of Metals — Refining of Crude Metal · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

27. How many of the following can be purified by using zone refining method? $\text{Ni, B, Ti, In, Ge, Mn, Ag, Si, Ga}$

(A) 4
(B) 5
(C) 6
(D) 7

General Organic Chemistry — Isomerism of Organic Compounds · AP EAPCET 2023 · 15 May Shift 1 Practice on Crucible ↗

28. The optically inactive compound from the following is

(A) 2-Bromopropanal
(B) 3-Bromopropanal
(C) 3-Bromo 2-iodopropanal
(D) 2-Bromo 3-iodopropanal

Chemical Bonding and Molecular Structure · AP EAPCET 2023 · 15 May Shift 2 Practice on Crucible ↗

29. Which of the following is not the property of covalent substances?

(A) have definite shape
(B) have low melting points
(C) good conductors of electricity
(D) soluble in non-polar solvents

Thermodynamics (C) · AP EAPCET 2023 · 15 May Shift 2 Practice on Crucible ↗

30. At $300\ \text{K}$ the enthalpy change for the following reaction is $-2800\ \text{kJ mol}^{-1}$

(A) -2802.49
(B) -2800.00
(C) -2814.94
(D) $+2802.49$

Answer Key (Q1 to Q30)

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

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

Sample Solution — Question 1 (AP EAPCET 2023 · 15 May Shift 1 · Correct Option: C)

Open on The Crucible ↗

Q1. If $f(x) = x^3 - x$ and $g(x) = \sin 2x$, then $f\left(g\left(\frac{\pi}{12}\right)\right) =$

$$g\left(\frac{\pi}{12}\right) = \sin^2\left(\frac{\pi}{12}\right) = \frac{1}{2}$$

$$\Rightarrow f\left(g\left(\frac{\pi}{12}\right)\right) = f\left(\frac{1}{2}\right) = \frac{1}{8} - \frac{1}{2} = -\frac{3}{8}$$

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