

JEE MAIN 2026 · QUESTION PAPER

23 Jan 2026 **Shift 1**

73 questions in exam order, with answer key

Subject	Section A multiple choice	Section B numerical value
● Physics	19 Q1 to Q19	5 Q20 to Q24
● Chemistry	20 Q25 to Q44	4 Q45 to Q48
● Mathematics	20 Q49 to Q68	5 Q69 to Q73
In this PDF	73 questions · answer key at the end	

- 1 Set a 3 hour timer and attempt the paper in one sitting, like the real exam.
- 2 Check yourself against the answer key at the end. Every question names its chapter, so you can see where marks went.
- 3 Got one wrong? Tap “Step-by-step solution” at the top right of it for the full working, where available.

Attempt this paper online

The same questions in the same order, with instant answer checking and step-by-step solutions where available.

prepwis.in/pyqs/paper/2026-01-23-morning · Free, no signup needed to start

Answers follow NTA's final answer keys. Typing errors are possible, so check doubtful answers against the official key. Spotted a mistake? prepwis.in/feedback · Terms: prepwis.in/terms

Q1 Electromagnetic Waves

[Step-by-step solution](#) > [prepwiser.in/questions/Ixr4zQAPKP](https://www.prepwiser.in/questions/Ixr4zQAPKP)

Match List - I with List - II.

List - I Relation		List - II Law	
A.	$\oint \vec{E} \cdot d\vec{l} = -\frac{d}{dt} \oint \vec{B} \cdot d\vec{a}$	I.	Ampere's circuital law
B.	$\oint \vec{B} \cdot d\vec{l} = \mu_0 \left(I + \epsilon_0 \frac{d\phi_E}{dt} \right)$	II.	Faraday's laws of electromagnetic induction
C.	$\oint \vec{E} \cdot d\vec{a} = \frac{1}{\epsilon_0} \int_V \rho dv$	III.	Ampere - Maxwell law
D.	$\oint \vec{B} \cdot d\vec{l} = \mu_0 I$	IV.	Gauss's law of electrostatics

Choose the correct answer from the options given below:

- (A) A-I, B-IV, C-III, D-II (B) A-II, B-III, C-IV, D-I (C) A-IV, B-I, C-II, D-III (D) A-II, B-III, C-I, D-IV

Q2 Rotational Motion

[Step-by-step solution](#) > [prepwiser.in/questions/OnY7xC8B7J](https://www.prepwiser.in/questions/OnY7xC8B7J)

Two small balls with masses m and $2m$ are attached to both ends of a rigid rod of length d and negligible mass. If angular momentum of this system is L about an axis (A) passing through its centre of mass and perpendicular to the rod then angular velocity of the system about A is:

- (A) $\frac{4}{3} \frac{L}{md^2}$ (B) $\frac{3}{2} \frac{L}{md^2}$ (C) $\frac{2L}{5md^2}$ (D) $\frac{2L}{md^2}$

Q3 Rotational Motion

[Step-by-step solution](#) > [prepwiser.in/questions/8dzkF72PGQ](https://www.prepwiser.in/questions/8dzkF72PGQ)

The moment of inertia of a square loop made of four uniform solid cylinders, each having radius R and length L ($R < L$) about an axis passing through the mid points of opposite sides, is (Take the mass of the entire loop as M):

- (A) $\frac{3}{4}MR^2 + \frac{1}{6}ML^2$ (B) $\frac{3}{8}MR^2 + \frac{7}{12}ML^2$ (C) $\frac{3}{4}MR^2 + \frac{7}{12}ML^2$ (D) $\frac{3}{8}MR^2 + \frac{1}{6}ML^2$

Q4 Atomic Physics

[Step-by-step solution](#) > [prepwiser.in/questions/Qt9GWv5aOo](https://www.prepwiser.in/questions/Qt9GWv5aOo)

In hydrogen atom spectrum, ($R \rightarrow$ Rydberg's constant)

- A. the maximum wavelength of the radiation of Lyman series is $\frac{4}{3R}$
 B. the Balmer series lies in the visible region of the spectrum
 C. the minimum wavelength of the radiation of Paschen series is $\frac{9}{R}$
 D. the minimum wavelength of Lyman series is $\frac{5}{4R}$

Choose the correct answer from the options given below:

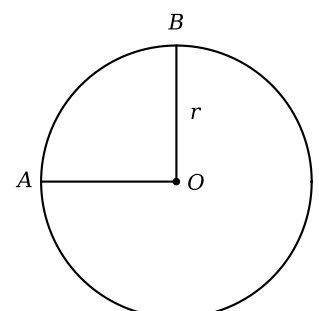
- (A) A, B Only (B) B, D Only (C) A, B and D Only (D) A, B and C Only

Q5 Current Electricity

[Step-by-step solution](#) > [prepwiser.in/questions/KCWyF5JIZI](https://www.prepwiser.in/questions/KCWyF5JIZI)

A wire of uniform resistance $\lambda \Omega/\text{m}$ is bent into a circle of radius r and another piece of wire with length $2r$ is connected between points A and B (AOB) as shown in figure. The equivalent resistance between points A and B is _____ Ω .

- (A) $(\pi + 1)2r\lambda$ (B) $\frac{6\pi\lambda r}{3\pi + 16}$ (C) $\frac{3\pi\lambda r}{8}$ (D) $2\pi\lambda r$



Q6 Simple Harmonic Motion[Step-by-step solution](https://www.prepwisar.in/questions/4g2hw6xCV4) > prepwisar.in/questions/4g2hw6xCV4

A simple pendulum of string length 30 cm performs 20 oscillations in 10 s. The length of the string required for the pendulum to perform 40 oscillations in the same time duration is ____ cm. [Assume that the mass of the pendulum remains same.]

- (A) 0.75 (B) 7.5 (C) 15 (D) 120

Q7 Dual Nature of Radiation & Matter[Step-by-step solution](https://www.prepwisar.in/questions/_ksRt1C6NB) > prepwisar.in/questions/_ksRt1C6NB

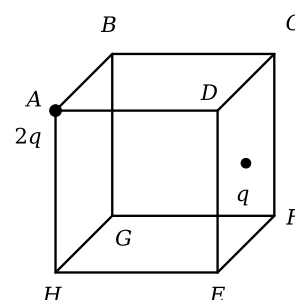
The de Broglie wavelength of an oxygen molecule at 27°C is $x \times 10^{-12}\text{m}$. The value of x is (take Planck's constant $= 6.63 \times 10^{-34}\text{J.s}$, Boltzmann constant $= 1.38 \times 10^{-23}\text{J/K}$, mass of oxygen molecule $= 5.31 \times 10^{-26}\text{kg}$)

- (A) 24 (B) 30 (C) 20 (D) 26

Q8 Electrostatics I: Charges, Field & Gauss's Law[Step-by-step solution](https://www.prepwisar.in/questions/5h3bR8ebSR) > prepwisar.in/questions/5h3bR8ebSR

Two point charges $2q$ and q are placed at vertex A and centre of face $CDEF$ of the cube as shown in figure. The electric flux passing through the cube is:

- (A) $\frac{3q}{2\epsilon_0}$ (B) $\frac{3q}{4\epsilon_0}$ (C) $\frac{q}{\epsilon_0}$ (D) $\frac{3q}{\epsilon_0}$

**Q9** Experimental Skills[Step-by-step solution](https://www.prepwisar.in/questions/ll14d9BiFQ) > prepwisar.in/questions/ll14d9BiFQ

In a screw gauge, the zero of the circular scale lies 3 divisions above the horizontal pitch line when their metallic studs are brought in contact. Using this instrument thickness of a sheet is measured. If pitch scale reading is 1 mm and the circular scale reading is 51 then the correct thickness of the sheet is ____ mm.

[Assume least count is 0.01 mm]

- (A) 1.54 (B) 1.50 (C) 1.51 (D) 1.48

Q10 Units, Dimensions & Errors[Step-by-step solution](https://www.prepwisar.in/questions/Ph0T5d4Kdr) > prepwisar.in/questions/Ph0T5d4Kdr

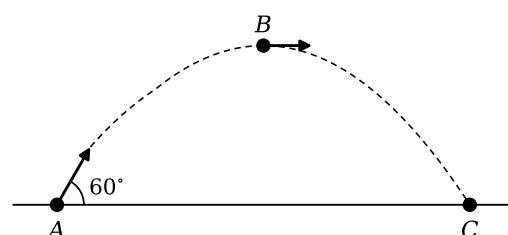
Four persons measure the length of a rod as 20.00cm, 19.75cm, 17.01cm and 18.25 cm. The relative error in the measurement of average length of the rod is:

- (A) 0.18 (B) 0.24 (C) 0.06 (D) 0.08

Q11 Projectile Motion & Relative Motion[Step-by-step solution](https://www.prepwisar.in/questions/gJdE0jivMC) > prepwisar.in/questions/gJdE0jivMC

An object is projected with kinetic energy K from a point A at an angle 60° with the horizontal. The ratio of the difference in kinetic energies at points B and C to that at point A (see figure), in the absence of air friction is:

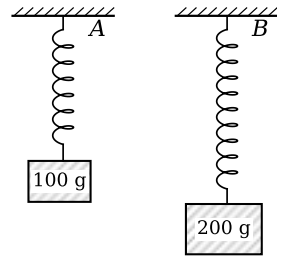
- (A) 3 : 4 (B) 1 : 4 (C) 2 : 3 (D) 1 : 2



Attempt this paper online with instant answer checking > [prepwisar.in/pyqs/paper/2026-01-23-morning](https://www.prepwisar.in/pyqs/paper/2026-01-23-morning)

Q12 Work, Energy & Power[Step-by-step solution](https://www.prepwisar.in/questions/QKg7qavQVZ) > prepwisar.in/questions/QKg7qavQVZ

Two blocks with masses 100 g and 200 g are attached to the ends of springs A and B as shown in figure. The energy stored in A is E . The energy stored in B , when spring constants k_A, k_B of A and B , respectively satisfy the relation $4k_A = 3k_B$, is:



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

Q13 Collision[Step-by-step solution](https://www.prepwisar.in/questions/E00OFHMSwV) > prepwisar.in/questions/E00OFHMSwV

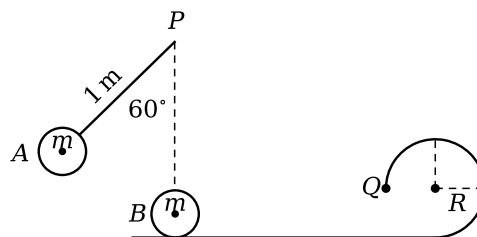
In a perfectly inelastic collision, two spheres made of the same material with masses 15 kg and 25 kg, moving in opposite directions with speeds of 10 m/s and 30 m/s, respectively, strike each other and stick together. The rise in temperature (in $^{\circ}\text{C}$), if all the heat produced during the collision is retained by these spheres, is:

(specific heat of sphere material $31 \text{ cal/kg}^{\circ}\text{C}$ and $1 \text{ cal} = 4.2 \text{ J}$)

- (A) 1.75 (B) 1.44 (C) 1.95 (D) 1.15

Q14 Collision[Step-by-step solution](https://www.prepwisar.in/questions/Iahh_XXMGE) > prepwisar.in/questions/Iahh_XXMGE

A small bob A of mass m is attached to a massless rigid rod of length 1 m pivoted at point P and kept at an angle of 60° with vertical as shown in figure. At distance of 1 m below point P , an identical bob B is kept at rest on a smooth horizontal surface that extends to a circular track of radius R as shown in figure. If bob B just manages to complete the circular path of radius R upto a point Q after being hit elastically by bob A , then radius R is ____ m.



- (A) $\frac{1}{5}$ (B) $\frac{2 - \sqrt{3}}{5}$ (C) $\frac{3}{5}$ (D) $\frac{2 + \sqrt{3}}{5}$

Q15 Electromagnetic Induction[Step-by-step solution](https://www.prepwisar.in/questions/qfW3f5W30A) > prepwisar.in/questions/qfW3f5W30A

A 20 m long uniform copper wire held horizontally is allowed to fall under the gravity ($g = 10 \text{ m/s}^2$) through a uniform horizontal magnetic field of 0.5 Gauss perpendicular to the length of the wire. The induced EMF across the wire when it travels a vertical distance of 200 m is ____ mV.

- (A) $200\sqrt{10}$ (B) $0.2\sqrt{10}$ (C) $20\sqrt{10}$ (D) $2\sqrt{10}$

Q16 Ray Optics[Step-by-step solution](https://www.prepwisar.in/questions/jowUcDOiIK) > prepwisar.in/questions/jowUcDOiIK

A thin prism with angle 5° of refractive index 1.72 is combined with another prism of refractive index 1.9 to produce dispersion without deviation. The angle of second prism is ____.

- (A) 5° (B) 4° (C) 4.5° (D) 6°

Attempt this paper online with instant answer checking > [prepwisar.in/pyqs/paper/2026-01-23-morning](https://www.prepwisar.in/pyqs/paper/2026-01-23-morning)

Q17 Ray Optics[Step-by-step solution > prepwiser.in/questions/QzmIQPK48Z](https://www.prepwiser.in/questions/QzmIQPK48Z)

Consider light travelling from a medium A to medium B separated by a plane interface. If the light undergoes total internal reflection during its travel from medium A to B and the speed of light in media A and B are $2.4 \times 10^8 \text{ m/s}$ and $2.7 \times 10^8 \text{ m/s}$, respectively, then the value of critical angle is:

- (A) $\cos^{-1} \left(\frac{8}{9} \right)$ (B) $\sin^{-1} \left(\frac{9}{8} \right)$ (C) $\cot^{-1} \left(\frac{3}{\sqrt{13}} \right)$ (D) $\tan^{-1} \left(\frac{8}{\sqrt{17}} \right)$

Q18 Magnetism & Matter[Step-by-step solution > prepwiser.in/questions/uc4tL4IR8H](https://www.prepwiser.in/questions/uc4tL4IR8H)

Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R).

Consider a ferromagnetic material:

Assertion (A): The individual atoms in a ferromagnetic material possess a magnetic dipole moment and interact with one another in such a way that they spontaneously align themselves forming domains.

Reason (R): At high enough temperature, the domain structure of ferromagnetic material disintegrates. Thus, magnetization will disappear at high enough temperature known as Curie temperature.

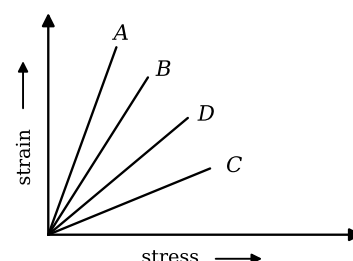
In the light of the above statements, choose the correct answer from the options given below:

- (A) (A) is true but (R) is false
(B) Both (A) and (R) are true and (R) is the correct explanation of (A)
(C) (A) is false but (R) is true
(D) Both (A) and (R) are true but (R) is not the correct explanation of (A)

Q19 Elasticity[Step-by-step solution > prepwiser.in/questions/wZt7f_zXiL](https://www.prepwiser.in/questions/wZt7f_zXiL)

The strain-stress plot for materials A , B , C and D is shown in the figure. Which material has the largest Young's modulus?

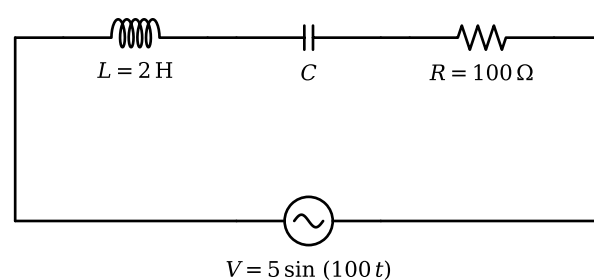
- (A) B (B) A (C) D (D) C

**Physics** Section B · Numerical value

Q20 to Q24

Q20 Alternating Current NUMERICAL[Step-by-step solution > prepwiser.in/questions/vYGocf9jUS](https://www.prepwiser.in/questions/vYGocf9jUS)

Using a variable frequency a.c. voltage source the maximum current measured in the given LCR circuit is 50 mA for $V = 5 \sin(100t)$. The values of L and R are shown in the figure. The capacitance of the capacitor (C) used is ____ μF .



Attempt this paper online with instant answer checking > [prepwiser.in/pyqs/paper/2026-01-23-morning](https://www.prepwiser.in/pyqs/paper/2026-01-23-morning)

Q21 Electromagnetic Waves **NUMERICAL**[Step-by-step solution](https://www.prepwiser.in/questions/TrVXG0a8wz) > prepwiser.in/questions/TrVXG0a8wz

The equation of the electric field of an electromagnetic wave propagating through free space is given by: $E = \sqrt{377} \sin(6.27 \times 10^3 t - 2.09 \times 10^{-5} x)$ N/C

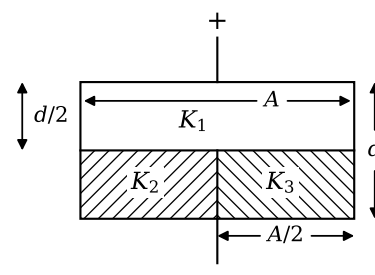
The average power of the electromagnetic wave is $\left(\frac{1}{\alpha}\right)$ W/m². The value of α is
(Take $\sqrt{\frac{\mu_0}{\epsilon_0}} = 377$ in SI units)

Q22 Wave Optics **NUMERICAL**[Step-by-step solution](https://www.prepwiser.in/questions/OYb7wdmXai) > prepwiser.in/questions/OYb7wdmXai

In two separate Young's double-slit experimental set-ups and two monochromatic light sources of different wavelengths are used to get fringes of equal width. The ratios of the slits separations and that of the wavelengths of light used are 2 : 1 and 1 : 2 respectively. The corresponding ratio of the distances between the slits and the respective screens (D_1/D_2) is ____ °

Q23 Electrostatics II: Potential & Capacitance **NUMERICAL**[Step-by-step solution](https://www.prepwiser.in/questions/hSCKOdP6Mk) > prepwiser.in/questions/hSCKOdP6Mk

The space between the plates of a parallel plate capacitor of capacitance C (without any dielectric) is now filled with three dielectric slabs of dielectric constants $K_1 = 2$, $K_2 = 3$ and $K_3 = 5$ (as shown in figure). If new capacitance is $\frac{n}{3}C$ then the value of n is ____.

**Q24** Electromagnetic Induction **NUMERICAL**[Step-by-step solution](https://www.prepwiser.in/questions/EKmpEkSo8T) > prepwiser.in/questions/EKmpEkSo8T

A simple pendulum made of mass 10 g and a metallic wire of length 10 cm is suspended vertically in a uniform magnetic field of 2 T. The magnetic field direction is perpendicular to the plane of oscillations of the pendulum. If the pendulum is released from an angle of 60° with vertical, then maximum induced EMF between the point of suspension and point of oscillation is ____ mV. (Take $g = 10 \text{ m/s}^2$)

Chemistry Section A · Multiple choice

Q25 to Q44

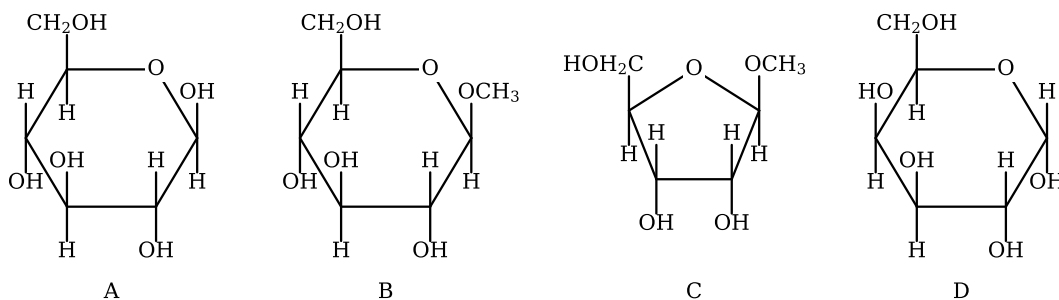
Q25 Aldehydes & Ketones[Step-by-step solution](https://www.prepwiser.in/questions/DaqkLYt81X) > prepwiser.in/questions/DaqkLYt81X

' x ' is the product which is obtained from propanenitrile and stannous chloride in the presence of hydrochloric acid followed by hydrolysis. ' y ' is the product which is obtained from the but-2-ene by the ozonolysis followed by hydrolysis. From the following, which product is not obtained when one mole of ' x ' and one mole of ' y ' react with each other in the presence of alkali followed by heating?

(A) 2-Methylpent-2-enal**(B)** 2-Methylbut-2-enal**(C)** 3-Methylbut-2-enal**(D)** Pent-2-enal

Attempt this paper online with instant answer checking > [prepwiser.in/pyqs/paper/2026-01-23-morning](https://www.prepwiser.in/pyqs/paper/2026-01-23-morning)

From the given following (A to D) cyclic structures, those which will not react with Tollen's reagent are:

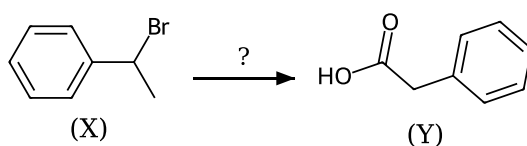


(A) A and D

(B) A and B

(C) B and D

(D) B and C



The correct sequence of reagents for the above conversion of X to Y is:

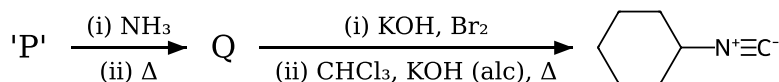
(A) (i) NaOH(aq)
(ii) Jones reagent
(iii) H_3O^+

(B) (i) NaOEt
(ii) $\text{B}_2\text{H}_6/\text{H}_2\text{O}_2$
(iii) Jones reagent

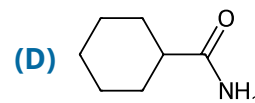
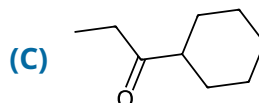
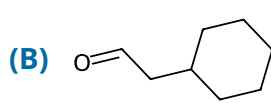
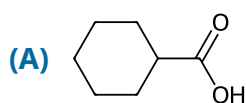
(C) (i) Jones reagent
(ii) NaOEt
(iii) Hot KMnO_4/KOH

(D) (i) $\text{B}_2\text{H}_6/\text{H}_2\text{O}_2$
(ii) NaOEt
(iii) Jones reagent

Compound 'P' undergoes the following sequence of reactions:



'P' is:



Consider the general reaction given below at 400 K



The values of K_p and K_c are studied under the same condition of temperature but variation in x and y .

(i) $K_p = 85.87$ and $K_c = 2.586$ appropriate units

(ii) $K_p = 0.862$ and $K_c = 28.62$ appropriate units

The values of x and y in (i) and (ii) respectively are:

(A)

(i)	(ii)
1,2	2,1

(B)

(i)	(ii)
1,3	2,1

(C)

(i)	(ii)
3,1	3,1

(D)

(i)	(ii)
4,1	4,1

The statements that are incorrect about the nickel(II) complex of dimethylglyoxime are:

- A. It is red in colour.
- B. It has a high solubility in water at $\text{pH} = 9$.
- C. The Ni ion has two unpaired d-electrons.
- D. The $\text{N} - \text{Ni} - \text{N}$ bond angle is almost close to 90° .
- E. The complex contains four five-membered metallacycles (metal containing rings).

Choose the correct answer from the options given below:

- (A) C and E Only (B) A, D and B Only (C) B, C and E Only (D) C and D Only

Given below are two statements:

Statement I: $[\text{CoBr}_4]^{2-}$ ion will absorb light of lower energy than $[\text{CoCl}_4]^{2-}$ ion.

Statement II: In $[\text{CoI}_4]^{2-}$ ion, the energy separation between the two set of d-orbitals is more than $[\text{CoCl}_4]^{2-}$ ion.

In the light of the above statements, choose the correct answer from the options given below:

- (A) Both Statement I and Statement II are false (B) Both Statement I and Statement II are true
(C) Statement I is false but Statement II is true (D) Statement I is true but Statement II is false

Given,

- (A) $n = 5, m_l = -1$
(B) $n = 3, l = 2, m_l = -1, m_s = +\frac{1}{2}$

The maximum number of electron(s) in an atom that can have the quantum numbers as given in (A) and (B) respectively are:

- (A) 4 and 1 (B) 2 and 4 (C) 26 and 1 (D) 8 and 1

Which of the following statements regarding the energy of the stationary state is true in the following one - electron systems?

- (A) $+2.18 \times 10^{-18} \text{ J}$ for second orbit of He^+ ion (B) $+8.72 \times 10^{-18} \text{ J}$ for first orbit of He^+ ion
(C) $-1.09 \times 10^{-18} \text{ J}$ for second orbit of H atom. (D) $-2.18 \times 10^{-18} \text{ J}$ for third orbit of Li^{2+} ion

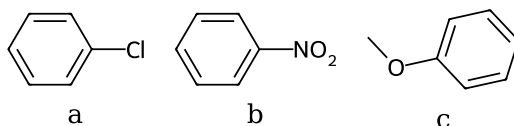
Given below are two statements:

Statement I: Sublimation is used for the separation and purification of compounds with low melting point.

Statement II: The boiling point of a liquid increases as the external pressure is reduced. In the light of the above statements, choose the correct answer from the options given below:

- (A) Both Statement I and Statement II are false (B) Statement I is true but Statement II is false
(C) Both Statement I and Statement II are true (D) Statement I is false but Statement II is true

Consider the following compounds



Arrange these compounds in the increasing order of reactivity with nitrating mixture.

- (A) $c < b < a$ (B) $b < c < a$ (C) $c < a < b$ (D) $b < a < c$

Match List - I with List - II.

List - I Functional group (detection)		List - II Change observed during detection	
A.	Unsaturation (Baeyer's test)	I.	Red colour appears
B.	Alcoholic group (Ceric ammonium nitrate test)	II.	Silver mirror appears
C.	Aldehyde group (Tollen's reagent)	III.	Violet colour appears
D.	Phenolic group (FeCl_3 test)	IV.	Discharge of pink colour

- (A) A-IV, B-I, C-II, D-III (B) A-III, B-IV, C-I, D-II (C) A-III, B-IV, C-II, D-I (D) A-IV, B-III, C-II, D-I

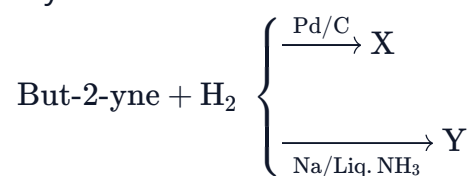
In the given electrochemical cell, $\text{Ag(s)}|\text{AgCl(s)}|\text{FeCl}_2(\text{aq}), \text{FeCl}_3(\text{aq})|\text{Pt(s)}$ at 298 K, the cell potential (E_{cell}) will increase when:

- A. Concentration of Fe^{2+} is increased.
 B. Concentration of Fe^{3+} is decreased.
 C. Concentration of Fe^{2+} is decreased.
 D. Concentration of Fe^{3+} is increased.
 E. Concentration of Cl^- is increased.

Choose the correct answer from the options given below:

- (A) C, D and E Only (B) A and B Only (C) B Only (D) A and E Only

But-2-yne and hydrogen (one mole each) are separately treated with (i) Pd/C and (ii) Na/ liq. NH_3 to give the products X and Y respectively.



Identify the incorrect statements.

- A. X and Y are stereoisomers.
 B. Dipole moment of X is zero.
 C. Boiling point of X is higher than Y.
 D. X and Y react with $\text{O}_3/\text{Zn} + \text{H}_2\text{O}$ to give different products.

Choose the correct answer from the options given below:

- (A) B and D Only (B) A and C Only (C) A and B Only (D) B and C Only

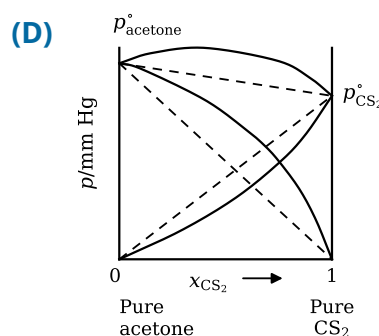
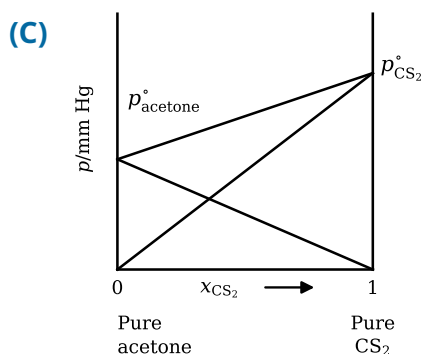
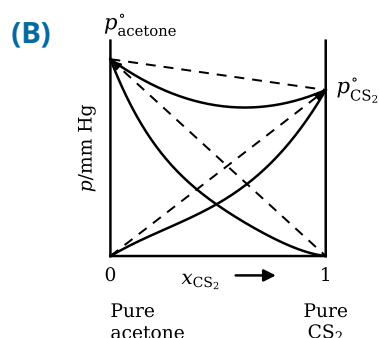
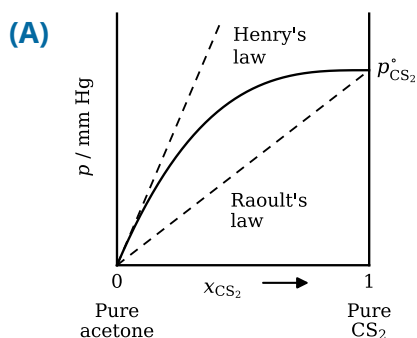
The correct statements from the following are:

- A. Ionic radii of trivalent cations of group 13 elements decreases down the group.
- B. Electronegativity of group 13 elements decreases down the group.
- C. Among the group 13 elements, Boron has highest first ionisation enthalpy.
- D. The trichloride and triiodide of group 13 elements are covalent in nature.

Choose the correct answer from the options given below:

- (A) B and D Only (B) C and D Only (C) A and D Only (D) A and C Only

Which one of the following graphs accurately represents the plot of partial pressure of CS_2 vs its mole fraction in a mixture of acetone and CS_2 at constant temperature?



A cup of water at 5°C (system) is placed in a microwave oven and the oven is turned on for one minute during which the water begins to boil. Which of the following option is true?

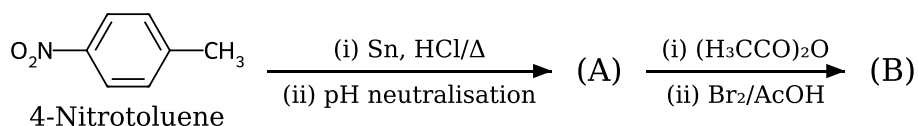
- (A) $q = +ve, w = -ve, \Delta U = +ve$ (B) $q = +ve, w = 0, \Delta U = -ve$
 (C) $q = +ve, w = -ve, \Delta U = -ve$ (D) $q = -ve, w = -ve, \Delta U = -ve$

Identify the molecule (X) with maximum number of lone pairs of electrons (obtained using Lewis dot structure) among HNO_3 , H_2SO_4 , NF_3 and O_3 . Choose the correct bond angle made by the central atom of the molecule (X).

- (A) 107° (B) 102° (C) 120° (D) 116°

Attempt this paper online with instant answer checking > [prepwiser.in/pyqs/paper/2026-01-23-morning](https://www.prepwiser.in/pyqs/paper/2026-01-23-morning)

Consider the following sequence of reactions.



Assuming that the reaction proceeds to completion, then 137 mg of 4-nitrotoluene will produce ____ mg of B.

(Given molar mass in gmol^{-1} H : 1, C : 12, N : 14, O : 16, Br : 80)

(A) 208

(B) 228

(C) 146

(D) 301

The correct trend in the first ionization enthalpies of the elements in the 3rd period of periodic table is:

(A) Si < S < Al < P < Cl

(B) Al < Si < S < P < Cl

(C) S < Si < Al < P < Cl

(D) Al < S < P < Si < Cl

Chemistry Section B · Numerical value

Q45 to Q48

For the following gas phase equilibrium reaction at constant temperature,



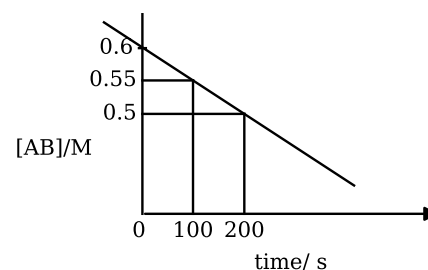
if the total pressure is $\sqrt{3}\text{atm}$ and the pressure equilibrium constant (K_p) is 9 atm, then the degree of dissociation is given as $(x \times 10^{-2})^{-1/2}$. The value of x is _____. (nearest integer)

The crystal field splitting energy of $[\text{Co}(\text{oxalate})_3]^{3-}$ complex is ' n ' times that of the $[\text{Cr}(\text{oxalate})_3]^{3-}$ complex. Here ' n ' is _____. (Assume $\Delta_0 \gg P$)

For the thermal decomposition of reactant $\text{AB}(\text{g})$, the following plot is constructed.

The half life of the reaction is ' x ' min.

$x =$ ____ min. (Nearest integer)



x mg of pure HCl was used to make an aqueous solution. 25.0 mL of 0.1M $\text{Ba}(\text{OH})_2$ solution is used when the HCl solution was titrated against it. The numerical value of x is ____ $\times 10^{-1}$. (Nearest integer)

Given : Molar mass of HCl and $\text{Ba}(\text{OH})_2$ are 36.5 and 171.0gmol^{-1} respectively.

Q49 Trigonometric Ratios & Identities

[Step-by-step solution](#) › [prepwiser.in/questions/2VakWJ1SRN](https://www.prepwiser.in/questions/2VakWJ1SRN)

Let α and β respectively be the maximum and the minimum values of the function $f(\theta) = 4 \left(\sin^4 \left(\frac{7\pi}{2} - \theta \right) + \sin^4(11\pi + \theta) \right) - 2 \left(\sin^6 \left(\frac{3\pi}{2} - \theta \right) + \sin^6(9\pi - \theta) \right)$, $\theta \in \mathbf{R}$. Then $\alpha + 2\beta$ is equal to:

- (A) 6 (B) 5 (C) 4 (D) 3

Q50 Complex Numbers

[Step-by-step solution](#) › [prepwiser.in/questions/6OitTWyw3s](https://www.prepwiser.in/questions/6OitTWyw3s)

Let $S = \{z : 3 \leq |2z - 3(1 + i)| \leq 7\}$ be a set of complex numbers.

Then $\text{Min}_{z \in S} \left| \left(z + \frac{1}{2}(5 + 3i) \right) \right|$ is equal to:

- (A) $\frac{1}{2}$ (B) $\frac{5}{2}$ (C) 2 (D) $\frac{3}{2}$

Q51 Ellipse

[Step-by-step solution](#) › [prepwiser.in/questions/yQNd95UTbj](https://www.prepwiser.in/questions/yQNd95UTbj)

Let the line $y - x = 1$ intersect the ellipse $\frac{x^2}{2} + \frac{y^2}{1} = 1$ at the points A and B. Then the angle made by the line segment AB at the center of the ellipse is:

- (A) $\pi - \tan^{-1} \left(\frac{1}{4} \right)$ (B) $\frac{\pi}{2} + \tan^{-1} \left(\frac{1}{4} \right)$ (C) $\frac{\pi}{2} + 2 \tan^{-1} \left(\frac{1}{4} \right)$ (D) $\frac{\pi}{2} - \tan^{-1} \left(\frac{1}{4} \right)$

Q52 Indefinite Integration

[Step-by-step solution](#) › [prepwiser.in/questions/wpFappG2_7](https://www.prepwiser.in/questions/wpFappG2_7)

Let $f(x) = \int \frac{(2-x^2) \cdot e^x}{(\sqrt{1+x})(1-x)^{3/2}} dx$. If $f(0) = 0$, then $f\left(\frac{1}{2}\right)$ is equal to:

- (A) $\sqrt{2e} - 1$ (B) $\sqrt{2e} + 1$ (C) $\sqrt{3e} - 1$ (D) $\sqrt{3e} + 1$

Q53 Determinants

[Step-by-step solution](#) › [prepwiser.in/questions/rWgM0Q2Aes](https://www.prepwiser.in/questions/rWgM0Q2Aes)

Among the statements:

I: If $\begin{vmatrix} 1 & \cos \alpha & \cos \beta \\ \cos \alpha & 1 & \cos \gamma \\ \cos \beta & \cos \gamma & 1 \end{vmatrix} = \begin{vmatrix} 0 & \cos \alpha & \cos \beta \\ \cos \alpha & 0 & \cos \gamma \\ \cos \beta & \cos \gamma & 0 \end{vmatrix}$, then $\cos^2 \alpha + \cos^2 \beta + \cos^2 \gamma = \frac{3}{2}$, and

II: If $\begin{vmatrix} x^2 + x & x + 1 & x - 2 \\ 2x^2 + 3x - 1 & 3x & 3x - 3 \\ x^2 + 2x + 3 & 2x - 1 & 2x - 1 \end{vmatrix} = px + q$, then $p^2 = 196q^2$,

- (A) both are true (B) both are false (C) only I is true (D) only II is true

Q54 Statistics

[Step-by-step solution](#) › [prepwiser.in/questions/0nFAefpU1U](https://www.prepwiser.in/questions/0nFAefpU1U)

Let the mean and variance of 8 numbers $-10, -7, -1, x, y, 9, 2, 16$ be $\frac{7}{2}$ and $\frac{293}{4}$, respectively.

Then the mean of 4 numbers $x, y, x + y + 1, |x - y|$ is:

- (A) 11 (B) 9 (C) 10 (D) 12

Q55 Vectors

[Step-by-step solution](#) › [prepwiser.in/questions/NaBA44R_oI](https://www.prepwiser.in/questions/NaBA44R_oI)

Let $\vec{a} = -\hat{i} + \hat{j} + 2\hat{k}$, $\vec{b} = \hat{i} - \hat{j} - 3\hat{k}$, $\vec{c} = \vec{a} \times \vec{b}$ and $\vec{d} = \vec{c} \times \vec{a}$. Then $(\vec{a} - \vec{b}) \cdot \vec{d}$ is equal to:

- (A) 2 (B) -2 (C) 4 (D) -4

Attempt this paper online with instant answer checking › [prepwiser.in/pyqs/paper/2026-01-23-morning](https://www.prepwiser.in/pyqs/paper/2026-01-23-morning)

Q56 Definite Integration[Step-by-step solution](#) > [prepwiser.in/questions/vRQP7Bjmpr](https://www.prepwiser.in/questions/vRQP7Bjmpr)

The value of the integral $\int_{\frac{\pi}{24}}^{\frac{5\pi}{24}} \frac{dx}{1 + \sqrt[3]{\tan 2x}}$ is:

- (A) $\frac{\pi}{3}$ (B) $\frac{\pi}{18}$ (C) $\frac{\pi}{6}$ (D) $\frac{\pi}{12}$

Q57 Quadratic Equations & Polynomial Inequalities[Step-by-step solution](#) > [prepwiser.in/questions/oF6PYxHpHk](https://www.prepwiser.in/questions/oF6PYxHpHk)

If α and β ($\alpha < \beta$) are the roots of the equation

$(-2 + \sqrt{3})(|\sqrt{x} - 3|) + (x - 6\sqrt{x}) + (9 - 2\sqrt{3}) = 0, x \geq 0$, then $\sqrt{\frac{\beta}{\alpha}} + \sqrt{\alpha\beta}$ is equal to:

- (A) 8 (B) 10 (C) 9 (D) 11

Q58 Quadratic Equations & Polynomial Inequalities[Step-by-step solution](#) > [prepwiser.in/questions/48JqDSAHwe](https://www.prepwiser.in/questions/48JqDSAHwe)

A building construction work can be completed by two masons A and B together in 22.5 days. Mason A alone can complete the construction work in 24 days less than mason B alone. Then mason A alone will complete the construction work in:

- (A) 36 days (B) 24 days (C) 30 days (D) 42 days

Q59 Straight Lines[Step-by-step solution](#) > [prepwiser.in/questions/htm4HL5ZRY](https://www.prepwiser.in/questions/htm4HL5ZRY)

A rectangle is formed by the lines $x = 0, y = 0, x = 3$ and $y = 4$. Let the line L be perpendicular to $3x + y + 6 = 0$ and divide the area of the rectangle into two equal parts. Then the distance of the point $(\frac{1}{2}, -5)$ from the line L is equal to:

- (A) $\sqrt{10}$ (B) $2\sqrt{5}$ (C) $2\sqrt{10}$ (D) $3\sqrt{10}$

Q60 Binomial Theorem[Step-by-step solution](#) > [prepwiser.in/questions/dX1RkUzhhQ](https://www.prepwiser.in/questions/dX1RkUzhhQ)

The sum of all possible values of $n \in \mathbb{N}$, so that the coefficients of x, x^2 and x^3 in the expansion of $(1 + x^2)^2 (1 + x)^n$, are in arithmetic progression is:

- (A) 12 (B) 9 (C) 3 (D) 7

Q61 Binomial Theorem[Step-by-step solution](#) > [prepwiser.in/questions/8HxZ2XqhAH](https://www.prepwiser.in/questions/8HxZ2XqhAH)

The value of $\frac{{}^{100}C_{50}}{51} + \frac{{}^{100}C_{51}}{52} + \dots + \frac{{}^{100}C_{100}}{101}$ is:

- (A) $\frac{2^{101}}{101}$ (B) $\frac{2^{100}}{101}$ (C) $\frac{2^{100}}{100}$ (D) $\frac{2^{101}}{100}$

Q62 Differential Equations[Step-by-step solution](#) > [prepwiser.in/questions/DxJragFG6q](https://www.prepwiser.in/questions/DxJragFG6q)

Let $y = y(x)$ be the solution of the differential equation

$x^4 dy + (4x^3 y + 2 \sin x) dx = 0, x > 0, y(\frac{\pi}{2}) = 0$.

Then $\pi^4 y(\frac{\pi}{3})$ is equal to:

- (A) 92 (B) 72 (C) 64 (D) 81

Q63 Limits[Step-by-step solution](#) > [prepwiser.in/questions/_G7YAoQPru](https://www.prepwiser.in/questions/_G7YAoQPru)

Let $f(x) = \begin{cases} \frac{ax^2 + 2ax + 3}{4x^2 + 4x - 3} & , x \neq -\frac{3}{2}, \frac{1}{2} \\ b & , x = -\frac{3}{2}, \frac{1}{2} \end{cases}$ be continuous at $x = -\frac{3}{2}$. If $f \circ f(x) = \frac{7}{5}$, then x is equal to:

- (A) 1.4 (B) 2 (C) 1 (D) 0

Q64 Trigonometric Equations[Step-by-step solution](#) › [prepwisar.in/questions/IDRYvnMbow](https://www.prepwisar.in/questions/IDRYvnMbow)

Number of solutions of $\sqrt{3} \cos 2\theta + 8 \cos \theta + 3\sqrt{3} = 0$, $\theta \in [-3\pi, 2\pi]$ is:

- (A) 5 (B) 4 (C) 3 (D) 0

Q65 Three Dimensional Geometry[Step-by-step solution](#) › [prepwisar.in/questions/6phEZO8XmO](https://www.prepwisar.in/questions/6phEZO8XmO)

Let the direction cosines of two lines satisfy the equations: $4l + m - n = 0$ and $2mn + 10nl + 3lm = 0$.

Then the cosine of the acute angle between these lines is:

- (A) $\frac{10}{7\sqrt{38}}$ (B) $\frac{10}{\sqrt{38}}$ (C) $\frac{10}{3\sqrt{38}}$ (D) $\frac{20}{3\sqrt{38}}$

Q66 Three Dimensional Geometry[Step-by-step solution](#) › [prepwisar.in/questions/emp0xms7IF](https://www.prepwisar.in/questions/emp0xms7IF)

The vertices B and C of a triangle ABC lie on the line $\frac{x}{1} = \frac{1-y}{-2} = \frac{z-2}{3}$. The coordinates of A and B are (1, 6, 3) and (4, 9, α) respectively and C is at a distance of 10 units from B. The area (in sq. units) of $\triangle ABC$ is:

- (A) $20\sqrt{13}$ (B) $5\sqrt{13}$ (C) $15\sqrt{13}$ (D) $10\sqrt{13}$

Q67 Hyperbola[Step-by-step solution](#) › [prepwisar.in/questions/tl2kvKL5oO](https://www.prepwisar.in/questions/tl2kvKL5oO)

Let the domain of the function $f(x) = \log_3 \log_5 \log_7 (9x - x^2 - 13)$ be the interval (m, n). Let the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ have eccentricity $\frac{n}{3}$ and the length of the latus rectum $\frac{8m}{3}$. Then $b^2 - a^2$ is equal to:

- (A) 7 (B) 9 (C) 11 (D) 5

Q68 Relations & Functions (Basic)[Step-by-step solution](#) › [prepwisar.in/questions/6TY-iaEUDj](https://www.prepwisar.in/questions/6TY-iaEUDj)

Let $A = \{-2, -1, 0, 1, 2, 3, 4\}$. Let R be a relation on A defined by xRy if and only if $2x + y \leq 2$. Let l be the number of elements in R. Let m and n be the minimum number of elements required to be added in R to make it reflexive and symmetric relations respectively. Then $l + m + n$ is equal to:

- (A) 34 (B) 32 (C) 33 (D) 35

Mathematics Section B · Numerical value

Q69 to Q73

Q69 Determinants **NUMERICAL**[Step-by-step solution](#) › [prepwisar.in/questions/gEpLk0BJ4K](https://www.prepwisar.in/questions/gEpLk0BJ4K)

Let $|A| = 6$, where A is a 3×3 matrix. If $|\text{adj}(3\text{adj}(A^2 \cdot \text{adj}(2A)))| = 2^m \cdot 3^n$, $m, n \in \mathbb{N}$, then $m + n$ is equal to _____.

Q70 Area Under Curves **NUMERICAL**[Step-by-step solution](#) › [prepwisar.in/questions/A5NHebremx](https://www.prepwisar.in/questions/A5NHebremx)

Let the area of the region bounded by the curve $y = \max\{\sin x, \cos x\}$, lines $x = 0$, $x = \frac{3\pi}{2}$, and the x-axis be A. Then, $A + A^2$ is equal to _____.

Q71 Differential Equations **NUMERICAL**[Step-by-step solution](#) › [prepwisar.in/questions/G1fvmJSN5d](https://www.prepwisar.in/questions/G1fvmJSN5d)

Let f be a twice differentiable non-negative function such that

$(f(x))^2 = 25 + \int_0^x ((f(t))^2 + (f'(t))^2) dt$. Then the mean of $f(\log_e(1))$, $f(\log_e(2))$, ..., $f(\log_e(625))$ is equal to _____.

The number of 4 -letter words, with or without meaning, which can be formed using the letters PQRPRSTUVP, is ____.

From the first 100 natural numbers, two numbers first a and then b are selected randomly without replacement. If the probability that $a - b \geq 10$ is $\frac{m}{n}$, $\gcd(m, n) = 1$, then $m + n$ is equal to

_____.

Answer key: JEE Main 2026 · 23 Jan · Shift 1

Answers follow NTA's final answer keys. Typing errors are possible, so check doubtful answers against the official key. Spotted a mistake? [prepwiser.in/feedback](#) · Terms: [prepwiser.in/terms](#)

Numbers match the question numbers above. For full working, open the solution link at the top right of each question.

Attempt this paper online with instant answer checking › [prepwiser.in/pyqs/paper/2026-01-23-morning](#)

Physics

1. B	2. B	3. D	4. D	5. B	6. B	7. D	8. B
9. A	10. C	11. A	12. D	13. B	14. A	15. C	16. B
17. D	18. D	19. D	20. 50	21. 2	22. 4	23. 8	24. 100

Chemistry

25. C	26. D	27. B	28. A	29. A	30. C	31. D	32. D
33. D	34. A	35. D	36. A	37. A	38. A	39. B	40. A
41. A	42. B	43. B	44. B	45. 125	46. 2	47. 10	48. 1825

Mathematics

49. B	50. D	51. B	52. C	53. B	54. A	55. B	56. D
57. B	58. A	59. C	60. B	61. B	62. D	63. C	64. A
65. C	66. B	67. A	68. C	69. 62	70. 12	71. 1565	72. 1422
73. 311							

PrepWiser is an independent practice platform and is not affiliated with the National Testing Agency (NTA). Questions are from official JEE Main papers; answers follow NTA's final answer keys.



Attempt this paper online

Done with the paper version? Take the same paper online: check each answer instantly and read step-by-step solutions where available. It is free, and you can start without signing up.



- 1 Scan the code to open this paper online, or go to prepwisser.in/pyqs/paper/2026-01-23-morning.
- 2 Mark the questions you got wrong. Each one names its chapter at the top left.
- 3 Practise those chapters next with the free chapter-wise PYQ PDFs at prepwisser.in/pyq-pdfs.

Also free on PrepWiser

All JEE Main 2026 papers

Every shift of 2026 as a PDF, and the year's questions chapter-wise: prepwisser.in/pyq-pdfs/jee-main/2026/

Chapter-wise PYQ PDFs

Every chapter with answer keys, 2020 to 2026: prepwisser.in/pyq-pdfs/

Daily Arena

10 questions from one chapter, every day: prepwisser.in/arena

Spotted a mistake in this PDF? Tell us at prepwisser.in/feedback.