

JEE MAIN 2026 · QUESTION PAPER

4 Apr 2026 **Shift 1**

74 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	5 Q45 to Q49
● Mathematics	20 Q50 to Q69	5 Q70 to Q74
In this PDF	74 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.

prepwisar.in/pyqs/paper/2026-04-04-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? prepwisar.in/feedback · Terms: prepwisar.in/terms

Q1 Moving Charges & Magnetism

[Step-by-step solution](#) › [prepwisar.in/questions/IF3C19udBn](https://www.prepwisar.in/questions/IF3C19udBn)

An insulated wire is wound so that it forms a flat coil with $N = 200$ turns. The radius of the innermost turn is $r_1 = 3\text{cm}$, and of the outermost turn $r_2 = 6\text{cm}$. If 20 mA current flows in it then the magnetic moment will be $\alpha \times 10^{-2} \text{A.m}^2$. The value of α is ____.

- (A) 4.4 (B) 2.64 (C) 3.25 (D) 1.2

Q2 Rotational Motion

[Step-by-step solution](#) › [prepwisar.in/questions/FwIKQ2I4IK](https://www.prepwisar.in/questions/FwIKQ2I4IK)

A solid sphere of mass M and radius R is divided into two unequal parts. The smaller part having mass $M/8$ is converted into a sphere of radius r and the larger part is converted into a circular disc of thickness t and radius $2R$. If I_1 is moment of inertia of a sphere having radius r about an axis through its centre and I_2 is the moment of inertia of a disc about its diameter, the ratio of their moment of inertia $I_2/I_1 =$ ____

- (A) 35 (B) 70 (C) 140 (D) 210

Q3 Wave Optics

[Step-by-step solution](#) › [prepwisar.in/questions/gqP5WTYaMJ](https://www.prepwisar.in/questions/gqP5WTYaMJ)

A slit of width a is illuminated by light of wavelength λ . The linear separation between 1st and 3rd minima in the diffraction pattern produced on a screen placed at a distance D from the slit system is ____.

- (A) $\frac{D\lambda}{a}$ (B) $1.5 \frac{D\lambda}{a}$ (C) $2 \frac{D\lambda}{a}$ (D) $3 \frac{D\lambda}{a}$

Q4 Wave Optics

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

A telescope with objective diameter R is used to observe a distant star emitting light of wavelength 500 nm, at a resolution of 5×10^{-7} radian. The value of R is ____ cm.

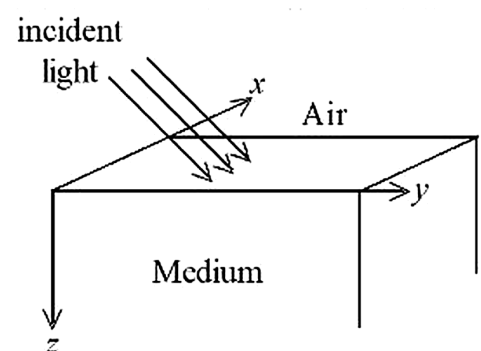
- (A) 61 (B) 122 (C) 244 (D) 305

Q5 Wave Optics

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

An unpolarized light is incident on the plane interface of air-dielectric medium shown in figure. If the incident angle is equal to Brewster angle, identify the expression representing reflected wave.

- (A) $(E_x \hat{i} + E_y \hat{j}) \sin(kx - kz - \omega t)$
 (B) $(E_x \hat{i} + E_z \hat{k}) \sin(kx + ky - \omega t)$
 (C) $(E_x \hat{j} + E_y \hat{k}) \sin(ky + kz - \omega t)$
 (D) $(E_x \hat{i} + E_y \hat{j} + E_z \hat{k}) \sin(kx + ky - kz - \omega t)$



Attempt this paper online with instant answer checking › [prepwisar.in/pyqs/paper/2026-04-04-morning](https://www.prepwisar.in/pyqs/paper/2026-04-04-morning)

[Step-by-step solution > prepwiser.in/questions/DT0nMc00eh](https://www.prepwiser.in/questions/DT0nMc00eh)

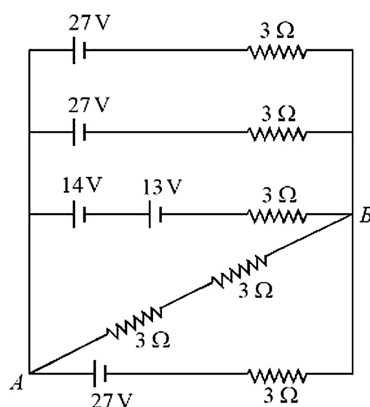
(A) 6.9 (B) 7.9 (C) 2.2 (D) 4.3

Step-by-step solution › [prepwiser.in/questions/ugYqG2JuAY](https://www.prepwiser.in/questions/ugYqG2JuAY)

(D) connect resistor of $2x\Omega$ in parallel to voltmeter.

[Step-by-step solution](#) › [prepwiser.in/questions/3F0aGutWyG](https://www.prepwiser.in/questions/3F0aGutWyG)

are .



- (A) 24V, 12A (B) 24V, 4A (C) 18V, 12A (D) 27V, 4A

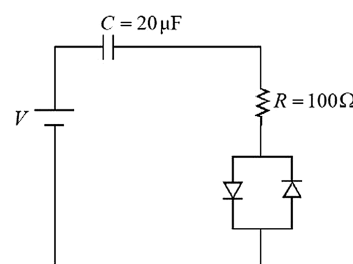
Step-by-step solution › [prepwiser.in/questions/Mr1fIRQBqs](https://www.prepwiser.in/questions/Mr1fIRQBqs)

Diagram (b) shows a logic circuit with two inputs, A and B. Input A is connected to a NOT gate, and its output is connected to one input of an AND gate. Input B is connected directly to the other input of the AND gate. The output of the AND gate is Y.

- (A) $Y = 1101$ (B) $Y = 0010$ (C) $Y = 0111$ (D) $Y = 1000$

Step-by-step solution › [prepwiser.in/questions/oUa14cz4Ss](https://www.prepwiser.in/questions/oUa14cz4Ss)

(A) 2.2 (B) 2.0 (C) 2.1 (D) 2.4



Q11 Kinetic Theory of Gases[Step-by-step solution](https://www.prepwiser.in/questions/W-2n4eYJx)

One gas of n_1 mole of molecules at temperature T_1 , volume V_1 , and pressure P_1 , and another gas of n_2 mole of molecules at temperature T_2 , volume V_2 , and pressure P_2 , are mixed resulting in pressure P and volume V of the mixture. The temperature of the mixture is ____.

- (A) $\frac{(T_1 + T_2)}{2}$ (B) $\frac{T_1 T_2 P V}{T_2 P_1 V_1 + T_1 P_2 V_2}$
(C) $\frac{(T_2 P_1 V_1 + T_1 P_2 V_2)}{T_1 T_2 P V}$ (D) $\frac{[T_1 - T_2]}{2}$

Q12 Projectile Motion & Relative Motion[Step-by-step solution](https://www.prepwiser.in/questions/6T-7tuUrmk)

The two projectiles are projected with the same initial velocities at the 15° and 30° with respect to the horizontal. The ratio of their ranges is $1 : x$. The value of x is

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

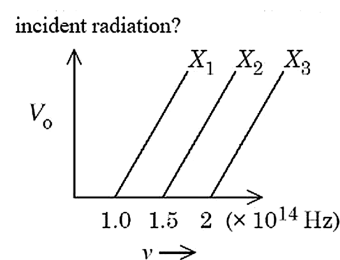
Q13 Electrostatics II: Potential & Capacitance[Step-by-step solution](https://www.prepwiser.in/questions/jzhkcpEM6C)

A parallel plate air capacitor is connected to a battery. The plates are pulled apart at uniform speed v . If x is the separation between the plates at any instant, then the time rate of change of electrostatic energy of the capacitor is proportional to x^α , where α is ____.

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

Q14 Dual Nature of Radiation & Matter[Step-by-step solution](https://www.prepwiser.in/questions/mtNKzCC256)

The graph shows variation of stopping potential V_0 with the frequency ν of the incident radiation for three photosensitive metals X_1 , X_2 and X_3 . Which metal will give out electrons with greater kinetic energy, for the same wavelength of incident radiation?



- (A) X_1
(B) X_2
(C) X_3
(D) All the metals will give out photo electrons with same kinetic energies.

Q15 Friction[Step-by-step solution](https://www.prepwiser.in/questions/yfKSC3df2x)

The time taken by a block of mass m to slide down from the highest point to the lowest point on a rough inclined plane is 50% more compared to the time taken by the same block on identical inclined smooth plane. Both inclined planes are at 45° with the horizontal. The coefficient of kinetic friction between the rough inclined surface and block is ____

- (A) $3/4$ (B) $2/3$ (C) $5/9$ (D) $4/9$

Q16 Experimental Skills[Step-by-step solution](https://www.prepwiser.in/questions/LWj6FvGbeo)

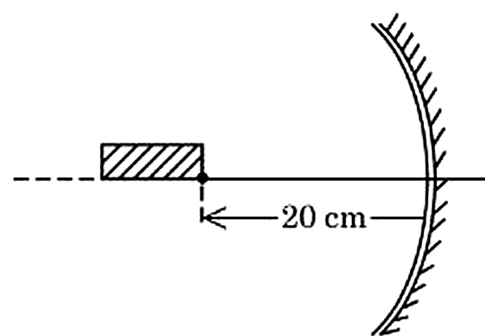
In a screw gauge when the circular scale is given five complete rotations it moves linearly by 2.5 mm. If the circular scale has 100 divisions, the least count of screw gauge is ____ mm.

- (A) 1×10^{-2} (B) 1×10^{-3} (C) 5×10^{-2} (D) 5×10^{-3}

Q17 Ray Optics[Step-by-step solution](https://www.prepwisar.in/questions/TAvUggiSfY)

A rod of length 10 cm lies along the principle axis of a concave mirror of focal length 10 cm as shown in figure. The length of the image is ____ cm.

- (A) 2.5 (B) 5 (C) 7.5 (D) 7

**Q18** Elasticity[Step-by-step solution](https://www.prepwisar.in/questions/AEII4k6MKu)

The increase in the pressure required to decrease the volume (ΔV) of water is $6.3 \times 10^7 \text{ N/m}^2$. The percentage decrease in the volume is ____.

(Bulk modulus of water = $2.1 \times 10^9 \text{ N/m}^2$.)

- (A) 2 % (B) 3 % (C) 6 % (D) 4 %

Q19 Elasticity[Step-by-step solution](https://www.prepwisar.in/questions/CdO6KpRXxn)

A string A of length 0.314 m and Young's modulus $2 \times 10^{10} \text{ N/m}^2$ is connected to another string B of length and Young's modulus both twice of those of A . This series combination of strings is then suspended from a rigid support and its free end is fixed to a load of mass 0.8 kg. The net change in length of the combination is ____ mm.

(radius of both the strings is 0.2 mm and acceleration due to gravity = 10 m/s^2) (Mass of both strings is to be neglected as compared to the mass of load)

- (A) 3 (B) 2 (C) 1.9 (D) 1

Physics Section B · Numerical value

Q20 to Q24

Q20 Alternating Current **NUMERICAL**[Step-by-step solution](https://www.prepwisar.in/questions/MubOCQSNtV)

An inductor of 10 mH, capacitor of $0.1 \mu\text{F}$ and a resistor of 100Ω are connected in series across an a.c power supply 220V, 70Hz. The power factor of the given circuit is 0.5. The difference in the inductive reactance and capacitance reactance is $\sqrt{3}\alpha \Omega$. The value of α is ____.

Q21 Simple Harmonic Motion **NUMERICAL**[Step-by-step solution](https://www.prepwisar.in/questions/VM6ZVI9tF3)

The velocity of a particle executing simple harmonic motion along x -axis is described as $v^2 = 50 - x^2$, where x represents displacement. If the time period of motion is $\frac{x}{7} \text{ s}$, the value of x is ____.

Q22 Work, Energy & Power **NUMERICAL**[Step-by-step solution](https://www.prepwisar.in/questions/631EFLPEIN)

A 1 kg block subjected to two simultaneous forces $(2\hat{i} + 3\hat{j} + 4\hat{k}) \text{ N}$ and $(3\hat{i} - \hat{j} - 2\hat{k}) \text{ N}$ is moved a distance of 25 m along $(3\hat{i} - 4\hat{j})$ direction. The work done in this process is ____ J.

Q23 Work, Energy & Power **NUMERICAL**[Step-by-step solution](https://www.prepwisar.in/questions/mkUIyH0Ejh)

A body of mass 2 kg begins to move under the influence of time dependent force $\vec{F} = (2t\hat{i} + 6t^2\hat{j}) \text{ N}$, where $\hat{i}$ and $\hat{j}$ are unit vectors along x and y -axis respectively. The power produced by the force at $t = 2 \text{ s}$ is ____ W.

The surface tension of a soap solution is $3.5 \times 10^{-2} \text{ N/m}$. The work required to increase the radius of a soap bubble from 1 cm to 2 cm is $\alpha \times 10^{-6} \text{ J}$. The value of α is ____.

$$(\pi = 22/7)$$

Chemistry Section A · Multiple choice

Q25 to Q44

At T(K), the equilibrium constant of $\text{A}_2(\text{g}) + \text{B}_2(\text{g}) \rightleftharpoons \text{C}(\text{g})$ is 2.7×10^{-5} .

What is the equilibrium constant for

$\frac{1}{3}\text{A}_2(\text{g}) + \frac{1}{3}\text{B}_2(\text{g}) \rightleftharpoons \frac{1}{3}\text{C}(\text{g})$ at the same temperature?

- (A) $(2.7 \times 10^{-5})^3$ (B) 6×10^{-2} (C) $\sqrt{2.7 \times 10^{-5}}$ (D) 3×10^{-2}

Match the LIST-I with LIST-II

List-I Complex ion	List-II Calculated spin only magnetic moment (BM)
A. $[\text{Cr}(\text{H}_2\text{O})_6]^{2+}$	I. 3.87
B. $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$	II. 5.92
C. $[\text{Cu}(\text{H}_2\text{O})_6]^{2+}$	III. 4.90
D. $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$	IV. 1.73

Choose the correct answer from the options given below:

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

What is the ratio of wave number of first line (lowest energy line) of Balmer series of H atomic spectrum to first line of its Brackett series?

- (A) 5 : 1 (B) 5 : 0.81 (C) 5 : 1.75 (D) 5 : 27

Which of the following is correct set of 4 quantum numbers of 19^{th} electron in Chromium (Atomic number = 24) in accordance with Aufbau principle?

- (A) $n = 3, l = 2, m = +2, s = +\frac{1}{2}$ (B) $n = 3, l = 2, m = -2, s = +\frac{1}{2}$
 (C) $n = 4, l = 1, m = 0, s = +\frac{1}{2}$ (D) $n = 4, l = 0, m = 0, s = +\frac{1}{2}$

Increasing order of electron withdrawing power of following functional groups is:

- a. -CN
 b. -COOH
 c. $-\text{NO}_2$
 d. -I

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

Consider the first order reaction $R \rightarrow P$.

The fraction of molecules decomposed in the given first order reaction can be expressed as

- (A) $1 - e^{k_1 t}$ (B) $1 + e^{k_1 t}$ (C) $1 + e^{-k_1 t}$ (D) $1 - e^{-k_1 t}$

The correct statements among the following are,

- A. Mo(VI) and W(VI) are less stable than Cr(VI).
 B. Ce^{4+} and Tb^{4+} are oxidant while Eu^{2+} and Yb^{2+} are reductant.
 C. Cm and Am have seven unpaired electrons.
 D. Actinoid contraction is greater from element to element than lanthanoid contraction.

Choose the correct answer from the options given below:

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

Correct statements from the following are

- A. Potassium dichromate is an oxidising agent and it oxidises $FeSO_4$ to $Fe_2(SO_4)_3$ in acidic medium.
 B. Sodium dichromate can be used as primary standard in volumetric estimation.
 C. CrO_4^{2-} and $Cr_2O_7^{2-}$ are interconvertible in aqueous solution by varying the pH of the solution.
 D. $Cr - O - Cr$ bond angle in $Cr_2O_7^{2-}$ is 126° .

Choose the correct answer from the options given below:

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

Match the LIST-I with LIST-II

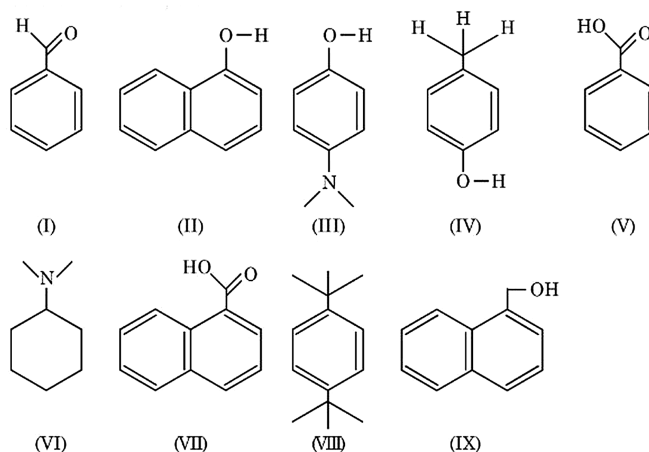
List-I		List-II	
Name of reaction		Reagent or catalyst used	
A.	Finkelstein reaction	I.	SbF_3
B.	Swarts reaction	II.	Na, dry ether
C.	Sandmeyer's reaction	III.	NaI
D.	Fittig reaction	IV.	Cu_2Cl_2

Choose the correct answer from the options given below:

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

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Amongst the following, the total number of compounds soluble in aqueous NaOH at room temperature is:



(A) 5

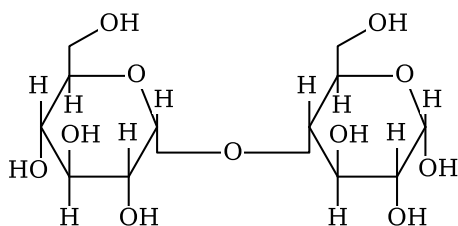
(B) 4

(C) 6

(D) 3

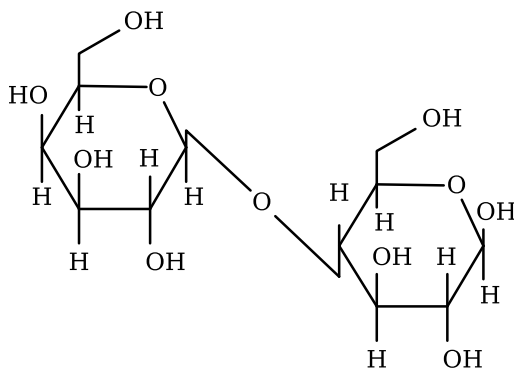
Given below are two statements:

Statement I: The structure of Maltose is given below:



Maltose is a non-reducing sugar.

Statement II: The structure of Lactose is given below:



Lactose is a reducing sugar.

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

(A) Both Statement I and Statement II are true

(B) Both Statement I and Statement II are false

(C) Statement I is true but Statement II is false

(D) Statement I is false but Statement II is true

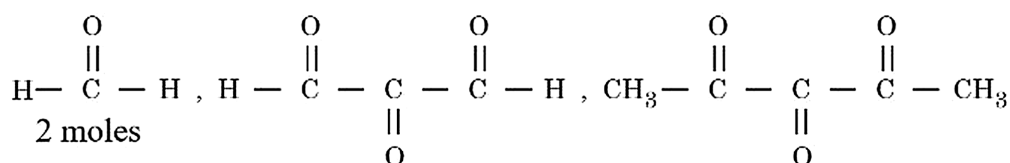
Match the List-I with List-II

List-I Name of amino acid	List-II One letter symbol/type
A. Arginine	I. D/Non-essential
B. Aspartic acid	II. R/Essential
C. Lysine	III. E/Non-essential
D. Glutamic acid	IV. K/Essential

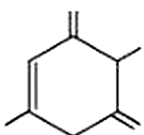
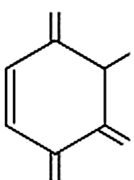
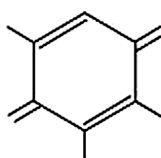
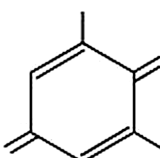
Choose the **correct** answer from the options given below:

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

An alkene(X) on ozonolysis followed by reduction gives following products.



The alkene(X) is:

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

A monoatomic anion (A) has 45 neutrons and 36 electrons. Atomic mass, group in the periodic table and physical state at room temperature of the element (A) respectively are

- (A) 80, 17, liquid (B) 81, 16, solid (C) 80, 16, gas (D) 81, 15, gas

Given below are two statements:

Statement I: The covalency of oxygen is generally two but it can exceed upto four. The oxidation state of oxygen in SO_2 is -2 and in OF_2 it is +2.**Statement II:** The anomalous behaviour of oxygen when compared to the other elements of group 16 is due to its small size and high electronegativity.

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

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

In order to oxidise a mixture of 1 mole each of FeC_2O_4 , $\text{Fe}_2(\text{C}_2\text{O}_4)_3$, FeSO_4 and $\text{Fe}_2(\text{SO}_4)_3$ in acidic medium, the number of moles of KMnO_4 required is

- (A) 3 (B) 2 (C) 5 (D) 7

Given below are two statements:

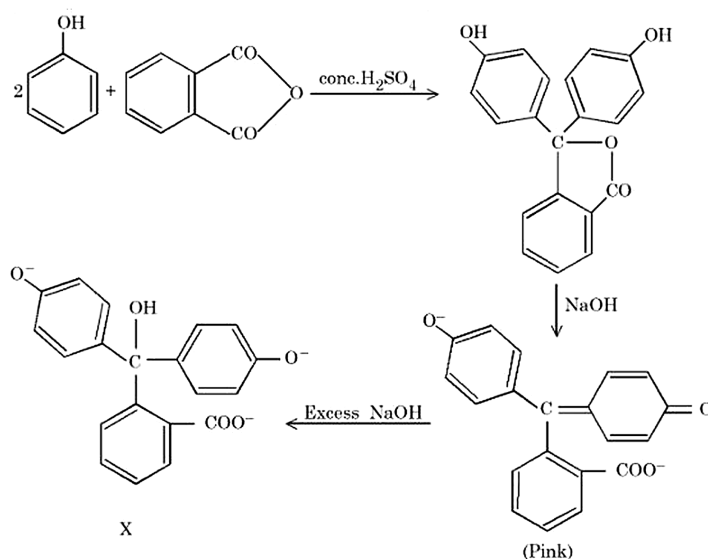
Statement I: For an ideal gas, heat capacity at constant volume is always greater than the heat capacity at constant pressure.

Statement II: In a constant volume process, no work is produced and all the heat withdrawn goes into the chaotic motion and is reflected by a temperature increase of the ideal gas.

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

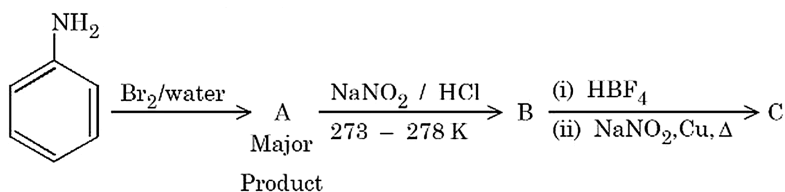
- (A) Both Statement I and Statement II are true (B) Both Statement I and Statement II are false
(C) Statement I is true but Statement II is false (D) Statement I is false but Statement II is true

Identify the colour of compound 'X' in the sequence of the reaction.



- (A) Violet (B) Green (C) Red (D) Colourless

Product C of the following reaction sequence will be



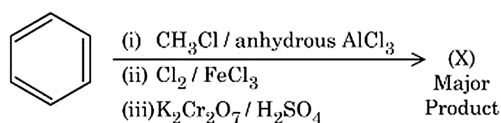
- (A) 1-Bromo-4-nitrobenzene (B) 1, 3, 5-Tribromo-2-nitrobenzene
(C) 4-Bromo-1-nitrobenzene (D) 1, 3, 5-Tribromobenzene

Number of moles and number of molecules in 1.4187 L of SO_2 at STP respectively are

- (A) 0.1266; 3.812×10^{22} (B) 0.0633; 3.812×10^{22}
(C) 0.1266; 7.6238×10^{22} (D) 0.0633; 7.6238×10^{22}

Q45 Carboxylic Acids & Their Derivatives **NUMERICAL**[Step-by-step solution](#) › prepwiser.in/questions/hpq1AVgrs

Consider the following sequence of reactions to give the major product (X)



P g of the major product (X) formed is reacted with NaHCO_3 solution to liberate a gas which occupied 11.2dm^3 at STP.

P = _____ g.

(Given molar mass in gmol^{-1} H : 1, C : 12, O : 16, Cl : 35.5)

Q46 Ionic Equilibrium **NUMERICAL**[Step-by-step solution](#) › prepwiser.in/questions/gfGY4uFpRu

The pH of a solution obtained by mixing 5 mL of $0.1\text{MNH}_4\text{OH}$ solution with 250 mL of $0.1\text{MNH}_4\text{Cl}$ solution is _____ $\times 10^{-2}$. (Nearest integer) Given: $\text{pK}_b(\text{NH}_4\text{OH}) = 4.74$

$$\log 2 = 0.30$$

$$\log 3 = 0.48$$

$$\log 5 = 0.70$$

Q47 Purification & Characterisation of Organic Compounds **NUMERICAL**[Step-by-step solution](#) › prepwiser.in/questions/uwI1p8uLlw

2.0 g of a bromo hydrocarbon (X) was subjected to Carius analysis, gave 3.36 g of AgBr. The percentage of carbon in the compound (X) is 26.7%. Total number of carbon atoms in the empirical formula for compound (X) is _____.

(Given molar mass in gmol^{-1} H : 1, C : 12, Br : 80, Ag : 108)

Q48 Solutions & Colligative Properties **NUMERICAL**[Step-by-step solution](#) › prepwiser.in/questions/QFOD82rkDo

A non-volatile, non-electrolyte solid solute when dissolved in 40 g of a solvent, the vapour pressure of the solvent decreased from 760 mm Hg to 750 mm Hg. If the same solution boils at 320 K, then the number of moles of the solvent present in the solution is _____. (Nearest integer)

[Given: boiling point of the pure solvent = 319.5K,

K_b of the solvent = 0.3Kkgmol^{-1}]

Q49 Chemical Bonding & Molecular Structure **NUMERICAL**[Step-by-step solution](#) › prepwiser.in/questions/WTLPTiYMeO

According to Lewis theory, the total number of σ bond-pairs and lone pair of electrons around the central atom of XeO_6^{4-} ion is _____.

Q50 Complex Numbers

[Step-by-step solution](#) › [prepwise.in/questions/ql2IPjpNjM](https://www.prepwise.in/questions/ql2IPjpNjM)

Let z be a complex number such that $|z + 2| = |z - 2|$ and $\arg\left(\frac{z+3}{z-i}\right) = \frac{\pi}{4}$. Then $|z|^2$ is equal to:

- (A) 9 (B) 4 (C) 5 (D) 1

Q51 Matrices

[Step-by-step solution](#) › [prepwise.in/questions/TkfZ0tCQqB](https://www.prepwise.in/questions/TkfZ0tCQqB)

Let $S = \left\{ A = \begin{bmatrix} a & b \\ c & d \end{bmatrix} : a, b, c, d \in \{0, 1, 2, 3, 4\} \text{ and } A^2 - 4A + 3I = 0 \right\}$ be a set of 2×2 matrices.

Then the number of matrices in S , for which the sum of the diagonal elements is equal to 4, is:

- (A) 20 (B) 17 (C) 21 (D) 19

Q52 Determinants

[Step-by-step solution](#) › [prepwise.in/questions/W6AHfk8upY](https://www.prepwise.in/questions/W6AHfk8upY)

Let $A = \begin{bmatrix} 1 & 1 & 2 \\ -2 & 0 & 1 \\ 1 & 3 & 5 \end{bmatrix}$. Then the sum of all elements of the matrix $\text{adj}(\text{adj}(2(\text{adj}A)^{-1}))$ is equal to:

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

Q53 Statistics

[Step-by-step solution](#) › [prepwise.in/questions/U9V-clAoeM](https://www.prepwise.in/questions/U9V-clAoeM)

Suppose that the mean and median of the non-negative numbers

21, 8, 17, a , 51, 103, b , 13, 67, ($a > b$), are 40 and 21, respectively. If the mean deviation about the median is 26, then $2a$ is equal to:

- (A) 109 (B) 117 (C) 161 (D) 131

Q54 Area Under Curves

[Step-by-step solution](#) › [prepwise.in/questions/W1ZchWGu3r](https://www.prepwise.in/questions/W1ZchWGu3r)

The area of the region $\{(x, y) : y \leq \pi - |x|, y \leq |x \sin x|, y \geq 0\}$ is:

- (A) $1 + \frac{\pi^2}{8}$ (B) $2 + \frac{\pi^2}{4}$ (C) $\frac{\pi^2}{8} - 1$ (D) $4 + \frac{\pi^2}{2}$

Q55 Definite Integration

[Step-by-step solution](#) › [prepwise.in/questions/u15QEUT7-r](https://www.prepwise.in/questions/u15QEUT7-r)

Let f be a real polynomial of degree n such that $f(x) = f'(x)f''(x)$, for all $x \in \mathbb{R}$. If $f(0) = 0$, then $36 \left(f'(2) + f''(2) + \int_0^2 f(x) dx \right)$ is equal to:

- (A) 42 (B) 46 (C) 56 (D) 66

Q56 Definite Integration

[Step-by-step solution](#) › [prepwise.in/questions/Tq8IINTone](https://www.prepwise.in/questions/Tq8IINTone)

Let $\int_{-2}^2 (|\sin x| + [x \sin x]) dx = 2(3 - \cos 2) + \beta$, where $[\cdot]$ is the greatest integer function. Then $\beta \sin\left(\frac{\beta}{2}\right)$ equals:

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

Q57 Relations & Functions (Basic)

[Step-by-step solution](#) › [prepwise.in/questions/jDdfp5-JBv](https://www.prepwise.in/questions/jDdfp5-JBv)

Let $[\cdot]$ denote the greatest integer function. If the domain of the function

$f(x) = \cos^{-1}\left(\frac{4x+2[x]}{3}\right)$ is $[\alpha, \beta]$, then $12(\alpha + \beta)$ is equal to:

- (A) 6 (B) 8 (C) 9 (D) 4

The number of functions $f : \{1, 2, 3, 4\} \rightarrow \{a, b, c\}$, which are not onto, is:

- (A) 48 (B) 45 (C) 51 (D) 35

If the set of all solutions of $|x^2 + x - 9| = |x| + |x^2 - 9|$ is $[\alpha, \beta] \cup [\gamma, \infty)$, then $(\alpha^2 + \beta^2 + \gamma^2)$ is equal to:

- (A) 9 (B) 18 (C) 36 (D) 72

Let the line $L_1 : x + 3 = 0$ intersect the lines $L_2 : x - y = 0$ and $L_3 : 3x + y = 0$ at the points A and B, respectively. Let the bisector of the obtuse angle between the lines L_2 and L_3 intersect the line L_1 at the point C. Then $BC^2 : AC^2$ is equal to:

- (A) 5:1 (B) 1:5 (C) 2:3 (D) 3:2

Let the vertex A of a triangle ABC be $(1, 2)$, and the mid-point of the side AB be $(5, -1)$. If the centroid of this triangle is $(3, 4)$ and its circumcenter is (α, β) , then $21(\alpha + \beta)$ is equal to:

- (A) 309 (B) 403 (C) 497 (D) 524

Let the smallest value of $k \in \mathbb{N}$, for which the coefficient of x^3 in $(1+x)^3 + (1+x)^4 + (1+x)^5 + \dots + (1+x)^{99} + (1+kx)^{100}$, $x \neq 0$, is $(43n + \frac{101}{4}) \binom{100}{3}$ for some $n \in \mathbb{N}$, be p . Then the value of $p + n$ is:

- (A) 10 (B) 11 (C) 12 (D) 13

Let $y = y(x)$ be the solution of the differential equation $\frac{dy}{dx} = (1+x+x^2)(1-y+y^2)$, $y(0) = \frac{1}{2}$. Then $(2y(1) - 1)$ is equal to

- (A) $\sqrt{3} \tan\left(\frac{11\sqrt{3}}{6}\right)$ (B) $\frac{\sqrt{3}}{2} \tan\left(\frac{11\sqrt{3}}{12}\right)$ (C) $\sqrt{3} \tan\left(\frac{11\sqrt{3}}{12}\right)$ (D) $\frac{\sqrt{3}}{2} \tan\left(\frac{11\sqrt{3}}{6}\right)$

The number of ways, of forming a queue of 4 boys and 3 girls such that all the girls are not together, is:

- (A) 5040 (B) 3050 (C) 3410 (D) 4320

The first term of an A.P. of 30 non-negative terms is $\frac{10}{3}$. If the sum of this A.P. is the cube of its last term, then its common difference is:

- (A) $\frac{5}{87}$ (B) $\frac{25}{83}$ (C) $\frac{15}{29}$ (D) $\frac{5}{29}$

Q66 Three Dimensional Geometry[Step-by-step solution](#) > prepwiser.in/questions/ZPs3D-It-M

A line with direction ratios $1, -1, 2$ intersects the lines $\frac{x}{2} = \frac{y}{3} = \frac{z+1}{3}$ and $\frac{x+1}{-1} = \frac{y-2}{1} = \frac{z}{4}$ at the points P and Q, respectively. If the length of the line segment PQ is α , then $225\alpha^2$ is equal to:

- (A) 1024 (B) 1014 (C) 1104 (D) 1204

Q67 Three Dimensional Geometry[Step-by-step solution](#) > prepwiser.in/questions/EpF-qxggbq

The square of the distance of the point $(-2, -8, 6)$ from the line $\frac{x-1}{1} = \frac{y-1}{2} = \frac{z}{-1}$ along the line $\frac{x+5}{1} = \frac{y+5}{-1} = \frac{z}{2}$ is equal to:

- (A) 3 (B) 6 (C) 8 (D) 12

Q68 Circles[Step-by-step solution](#) > prepwiser.in/questions/vat5Mk0g65

Suppose that two chords, drawn from the point $(1, 2)$ on the circle $x^2 + y^2 + x - 3y = 0$ are bisected by the y -axis. If the other ends of these chords are R and S, and the mid point of the line segment RS is (α, β) , then $6(\alpha + \beta)$ is equal to:

- (A) 1 (B) 3 (C) 4 (D) 6

Q69 Differentiation[Step-by-step solution](#) > prepwiser.in/questions/ICptgGqL4e

If $y = \tan^{-1} \left(\frac{3 \cos x - 4 \sin x}{4 \cos x + 3 \sin x} \right) + 2 \tan^{-1} \left(\frac{x}{1 + \sqrt{1-x^2}} \right)$, then $\frac{dy}{dx}$ at $x = \frac{\sqrt{3}}{2}$ is equal to:

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

Mathematics Section B · Numerical value

Q70 to Q74

Q70 Ellipse **NUMERICAL**[Step-by-step solution](#) > prepwiser.in/questions/1OHMHXnyGj

Consider the parabola P : $y^2 = 4kx$ and the ellipse E : $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$. Let the line segment joining the points of intersection of P and E, be their latus rectums. If the eccentricity of E is e , then $e^2 + 2\sqrt{2}$ is equal to ____.

Q71 Continuity & Differentiability **NUMERICAL**[Step-by-step solution](#) > prepwiser.in/questions/0BVtADI0mQ

The number of points, at which the function

$$f(x) = \max \{6x, 2 + 3x^2\} + |x - 1| \cos \left| x^2 - \frac{1}{4} \right|, x \in (-\pi, \pi),$$

is not differentiable, is ____.

Q72 Probability: Basic **NUMERICAL**[Step-by-step solution](#) > prepwiser.in/questions/PjjnGTfpL8

A coin is tossed 8 times. If the probability that exactly 4 heads appear in the first six tosses and exactly 3 heads appear in the last five tosses is p , then $96p$ is equal to ____.

Q73 Trigonometric Ratios & Identities **NUMERICAL**[Step-by-step solution](#) > prepwiser.in/questions/oHTqC192_P

If $A = \frac{\sin 3^\circ}{\cos 9^\circ} + \frac{\sin 9^\circ}{\cos 27^\circ} + \frac{\sin 27^\circ}{\cos 81^\circ}$ and $B = \tan 81^\circ - \tan 3^\circ$, then $\frac{B}{A}$ is equal to

____.

Q74 Trigonometric Ratios & Identities **NUMERICAL**[Step-by-step solution](#) > prepwiser.in/questions/trrw2Kk8F_

Let $\vec{a}_k = (\tan \theta_k) \hat{i} + \hat{j}$ and $\vec{b}_k = \hat{i} - (\cot \theta_k) \hat{j}$, where $\theta_k = \frac{2^{k-1}\pi}{2^n+1}$, for some $n \in \mathbb{N}, n > 5$. Then the value of $\frac{\sum_{k=1}^n |\vec{a}_k|^2}{\sum_{k=1}^n |\vec{b}_k|^2}$ is

Answer key: JEE Main 2026 · 4 Apr · Shift 1

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Physics

1.	B	2.	B	3.	C	4.	B	5.	A	6.	C	7.	A	8.	B	9.	A	10.	A
11.	B	12.	B	13.	A	14.	A	15.	C	16.	D	17.	B	18.	B	19.	B	20.	100
21.	44	22.	35	23.	200	24.	264												

Chemistry

25.	D	26.	D	27.	B	28.	D	29.	C	30.	D	31.	C	32.	B	33.	B	34.	A
35.	D	36.	A	37.	D	38.	A	39.	A	40.	B	41.	D	42.	D	43.	B	44.	B
45.	78	46.	756	47.	5	48.	5	49.	6										

Mathematics

50.	A	51.	D	52.	D	53.	D	54.	B	55.	C	56.	B	57.	A	58.	B	59.	B
60.	A	61.	C	62.	B	63.	C	64.	D	65.	A	66.	B	67.	B	68.	B	69.	C
70.	3	71.	3	72.	9	73.	2	74.	3										

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