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CHEMISTRY · EAPCET (EAMCET)

States of Matter

Previous Year Questions with answers

391 questions · **149** papers · **2010–2026** · newest paper first

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What is in this PDF: every States of Matter question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

Step-by-step solutions for every question are free in the EdLoop EAPCET app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

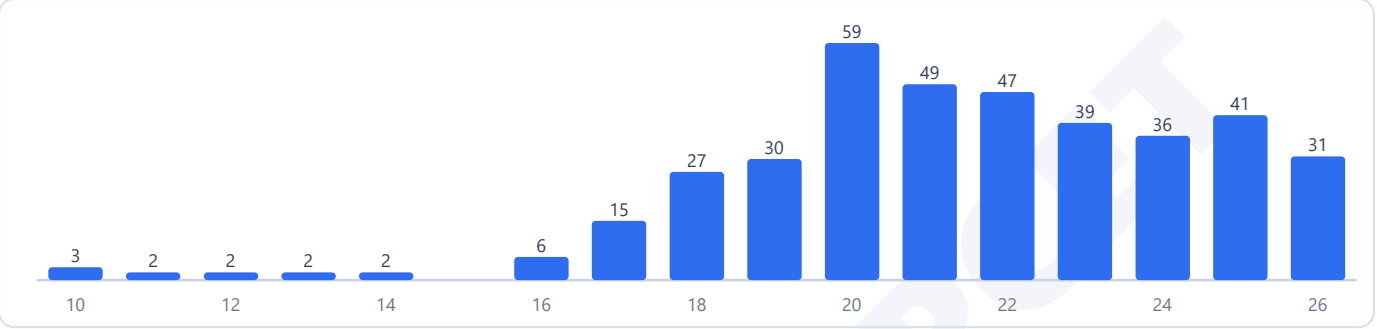
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Chapter at a glance

6.3%	391	77 of 77	391 / 0
of Chemistry questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 2.3 questions per paper in 2024–2026 against 2.8 in 2022–2023.

Questions per year



Counts are the questions we hold: 391 in 149 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2010–2026)

Gaseous State	218
Solid State	161
Liquid State	12

How often it comes up

States of Matter is the second largest contributor in the chemistry curriculum, standing at rank 2 of 31 chemistry chapters between 2022 and 2026. Looking at our entire exam compilation from 2010 through 2026, the chapter supplied 391 questions across 149 papers, taking a 6.6 percent share of the entire subject and averaging 2.6 questions per paper. In the modern timeframe from 2022 to 2026, the volume remained prominent with 194 questions across 77 sittings, producing 2.5 questions per paper and a 6.3 percent subject share.

The chapter maintains a continuous presence across both regional exams, appearing in every paper between 2022 and 2026. Across the state split in this timeframe, AP sittings yielded 133 questions in 48 papers (2.8 questions per paper, 6.9 percent share), while TS sittings gathered 61 questions in 29 papers (2.1 questions per paper, 5.3 percent share).

In earlier administrations from 2010 through 2021, papers featured 197 questions across 72 sittings, which corresponded to 2.7 questions per paper and 6.8 percent subject share. Across the most recent three exam cycles from 2024 to 2026, question setters generated 108 questions across 46 papers, yielding 2.3 questions per test and 5.9 percent share. The long-term share trend between the early era and the last three years is down, while the movement from the five-year recent window to the last three years is about the same. Every sitting carries multiple questions from this combined module.

Most-asked topics

The chapter unites gas behaviour, crystalline solids, and liquid transport:

- **Gaseous State** provides the largest pool with 218 questions in total and 102 across the recent window through 2026. Core themes include the ideal gas law, kinetic molecular theory, root mean square and most probable molecular speeds, Grahams law of diffusion, Daltons partial pressures, and real gas van der Waals parameters.

- **Solid State** is the second major pillar, accounting for 161 questions overall and 87 recent questions through 2026. Questions focus on unit cell density calculations, packing fractions in primitive, body-centred, and face-centred cubic lattices, tetrahedral and octahedral void allocations, and crystal defects such as Schottky and Frenkel imperfections.
- **Liquid State** contributes a smaller selection of 12 questions overall, with 5 appearing in the recent window up to 2025. Items here concentrate on Newtons coefficient of viscosity, laminar velocity gradients, surface tension phenomena, and vapour pressure temperature curves.

What the questions look like

Gas questions alternate between rapid algebraic comparisons and multi-step stoichiometric gas collections. A typical problem provides the mass percentages of two gases in a closed vessel and asks for the ratio of their partial pressures, or equates the root mean square velocity of one gas at an unknown temperature to the most probable velocity of another gas at a reference temperature. Examiners also love thermal expansion flask questions where an open container is heated, expelling a calculated fraction of the initial gas.

Solid state questions emphasize unit cell geometry. You will calculate the atomic mass or density of an element crystallizing in face-centred or body-centred cubic form using the edge length and Avogadro constant. Another recurrent format specifies an ionic compound forming a close-packed anion framework and asks for the formula when cations occupy a designated fraction of octahedral or tetrahedral interstices.

How to practise it

Split your preparation evenly between the kinetic theory of gases and crystal structures. For gases, practice converting Celsius to Kelvin without oversight, and become automatic with molecular speed ratios where root mean square, average, and most probable speeds scale with the square root of temperature over molar mass. Practice Daltons law by linking partial pressure directly to mole fractions.

For the solid state half, memorize the radius-to-edge relationships for simple cubic, body-centred cubic, and face-centred cubic systems. Remember that a lattice with N close-packed atoms generates N octahedral voids and twice that number of tetrahedral voids. Ensure you can solve unit cell density problems cleanly by expressing edge length in centimetres and converting formula units carefully.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

At $27^{\circ}C$, a real gas of molar mass $44\ g\ mol^{-1}$ occupies a volume of 0.4 L at 40 atm pressure. If the compressibility factor of it is 0.65, what is its weight (in g)?
(R= 0.082 L-atm $K^{-1}mol^{-1}$)

(A) 42
(B) 44
(C) 46
(D) 28

Answer: (B) 44 · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A compound is formed by A (cations), B(cations) and O(anions). Atoms of O form ccp lattice. Atoms of A occupy 50% of octahedral voids and atoms of B occupy 25% of tetrahedral voids. What is the molecular formula of the compound?

(A) AB_2O_4
(B) AB_2O_2
(C) ABO_3
(D) ABO_2

Answer: (D) ABO_2 · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 2 MCQ

At 300 K, one mole of a gas present in a 10 L flask exerted a pressure of 2.71 atm. What is its compressibility factor?
($R = 0.082\ L\ atm\ mol^{-1}\ K^{-1}$)

(A) 1.15
(B) 0.95
(C) 1.10
(D) 0.91

Answer: (C) 1.10 · The council's preliminary key

Q4 AP EAPCET 2026 · 18 May · Shift 2 MCQ

The number of unit cells in 5.85 g of cube shaped ideal crystal of NaCl (Z=4) is $x \times 10^{21}$. The value of x is
(At. Wt.: Na = 23 u, Cl = 35.5 u), (N= $6 \times 10^{23}\ mol^{-1}$)

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(A) 10
(B) 18
(C) 15
(D) 20

Answer: (C) 15 · The council's preliminary key

Q5 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Which of the following is not correct about the hexagonal close packing?

(A) The co-ordination number is 12
(B) Packing efficiency in it is 74%
(C) Tetrahedral voids of the second layer are covered by the spheres of the third layer
(D) In this arrangement, spheres of the fourth layer are aligned with those of the first layer

Answer: (D) In this arrangement, spheres of the fourth layer are aligned with those of the first layer · The council's preliminary key

Q6 AP EAPCET 2026 · 15 May · Shift 2 MCQ

An ideal gas with density $3.0\ \mathrm{g\ L^{-1}}$ has a pressure of 684 mm Hg at $25^{\circ}\mathrm{C}$. The rms speed (in $\mathrm{m\ s^{-1}}$) of it is
$(1\ \mathrm{atm} = 10^5\ \mathrm{Pa})$

(A) 3×10^2
(B) 3×10^3
(C) 4×10^2
(D) 4×10^3

Answer: (A) 3×10^2 · The council's preliminary key

Q7 AP EAPCET 2026 · 15 May · Shift 2 MCQ

An element of molar mass $250\ \mathrm{g}\ mol^{-1}$ crystallizes in a simple cubic lattice. The density of the unit cell is $7.2\ g\ cm^{-3}$. What is the radius of atom (in Å) of that element?
$(N_0 = 6.02 \times 10^{23} mol^{-1})$

(A) 3.86
(B) 1.93
(C) 7.72
(D) 5.79

Answer: (B) 1.93 · The council's preliminary key

Q8 AP EAPCET 2026 · 14 May · Shift 1 MCQ

At T(K), the rms velocity of an ideal gas is $x\ \mathrm{m\ s^{-1}}$. At what temperature (in K), the rms velocity of gas becomes $3x\ \mathrm{m\ s^{-1}}$?

(A) 3T
(B) 4T
(C) 9T
(D) 18T

Answer: (C) 9T · The council's preliminary key

Q9 AP EAPCET 2026 · 14 May · Shift 1 MCQ

Atoms of element B form hcp lattice and atoms of element A occupy $\frac{2}{3}$rd of the tetrahedral voids. The formula of the compound formed by the elements A and B is

(A) A_3B_4
(B) A_4B_3
(C) AB_4
(D) A_4B

Answer: (B) A_4B_3 · The council's preliminary key

Q10 AP EAPCET 2026 · 14 May · Shift 2 MCQ

A gas mixture contains 64% methane and 36% ethane by mass. The density of the mixture at $27^{\circ}\mathrm{C}$ and $750\ mm$ pressure (in $g\ L^{-1}$) is
$(at.wt\ C = 12\ u, H = 1\ u, R = 0.082\ L\ atm\ K^{-1}mol^{-1})$

(A) 0.57
(B) 0.87
(C) 0.67
(D) 0.77

Answer: (D) 0.77 · The council's preliminary key

Q11 AP EAPCET 2026 · 14 May · Shift 2 MCQ

The fraction of the total volume occupied by the atoms present in a face centred cubic unit cell is

(A) $\frac{\pi}{6}$
(B) $\frac{\pi}{3\sqrt{2}}$
(C) $\frac{\pi\sqrt{3}}{8}$
(D) $\frac{\pi}{2\sqrt{2}}$

Answer: (B) $\frac{\pi}{3\sqrt{2}}$ · The council's preliminary key

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Q12 AP EAPCET 2026 · 13 May · Shift 1 MCQ

At 300 K, air is present in an open round bottom flask of volume 10 L. The flask is heated to 750 K. Some air is expelled from the flask. What is the fraction of air expelled from the flask? (Assume air as an ideal gas)

(A) $\frac{2}{5}$
(B) $\frac{3}{5}$
(C) $\frac{1}{5}$
(D) $\frac{4}{5}$

Answer: (B) $\frac{3}{5}$ · The council's preliminary key

Q13 AP EAPCET 2026 · 13 May · Shift 1 MCQ

A metal X of atomic mass $75\ u$ forms a cubic lattice of edge length 5Å. If the density of the lattice is $2\ g\ cm^{-3}$, the radius (in Å) of the metal atom is

$(N = 6 \times 10^{23}\ mol^{-1})$

(A) 1.083
(B) 4.330
(C) 2.165
(D) 6.495

Answer: (C) 2.165 · The council's preliminary key

Q14 AP EAPCET 2026 · 13 May · Shift 2 MCQ

At T(K), the kinetic energy of one mole of an ideal gas (molar mass = $M\ g\,mol^{-1}$) is $Y\ kJ\,mol^{-1}$. What is its most probable velocity (U_{mp}) in $m\,s^{-1}$?

(A) $10^3\sqrt{\frac{3M}{Y}}$
(B) $10^3\sqrt{\frac{Y}{3M}}$
(C) $2 \times 10^3\sqrt{\frac{3M}{Y}}$
(D) $2 \times 10^3\sqrt{\frac{Y}{3M}}$

Answer: (D) $2 \times 10^3\sqrt{\frac{Y}{3M}}$ · The council's preliminary key

Q15 AP EAPCET 2026 · 13 May · Shift 2 MCQ

A crystal lattice has A (cations), B (cations) and O (anions). Atoms of O form hcp lattice. Atoms of A occupy 25% of octahedral voids and atoms of B occupy 25% of tetrahedral voids. What is the molecular formula of the crystal lattice?

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(A) ABO_2
(B) A_2BO_4
(C) AB_2O_4
(D) ABO_3

Answer: (C) AB_2O_4 · The council's preliminary key

Q16 AP EAPCET 2026 · 12 May · Shift 1 MCQ

An ideal gas is cooled from 400 K to 324 K. What is the decrease in u_{rms} of the gas?

(A) 5 %
(B) 15 %
(C) 20 %
(D) 10 %

Answer: (D) 10 % · The council's preliminary key

Q17 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If r is the radius of a metal atom, then the total volume of atoms present in a body centered cubic cell of a metal is

(A) $\frac{4}{3}\pi r^3$
(B) $\frac{8}{3}\pi r^3$
(C) $\frac{16}{3}\pi r^3$
(D) $\frac{20}{3}\pi r^3$

Answer: (B) $\frac{8}{3}\pi r^3$ · The council's preliminary key

Q18 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The rms velocity of SO_2 molecules at 400 K is same as the most probable velocity of O_2 molecules at T(K). What is the kinetic energy (in kJ) of 5 moles of O_2 at T(K)?
(At.wt: S = 32 u, O = 16 u), (R = 8.3 $J\,K^{-1}\,mol^{-1}$)

(A) 16.875
(B) 18.675
(C) 17.685
(D) 15.768

Answer: (B) 18.675 · The council's preliminary key

Q19 AP EAPCET 2026 · 12 May · Shift 2 MCQ

A compound is formed by elements A and B. Element B forms ccp structure. Atoms of A occupy x % of tetrahedral voids. All the octahedral voids are vacant. Compound formula is A_2B_3. What is x %?

(A) 50
(B) 25
(C) 33.3
(D) 66.6

Answer: (C) 33.3 · The council's preliminary key

Q20 TS EAPCET 2026 · 11 May · Shift 1 MCQ

At 300 K, a 10 L vessel contains 0.4 g of He, 1.6 g of O_2 and 1.4 g of N_2. The partial pressure of He gas (in atm) is (Assume ideal behaviour for all gases)
$(R = 0.0821\ L\ atm\ K^{-1}\ mol^{-1})$

(A) 0.123
(B) 0.246
(C) 0.323
(D) 0.133

Answer: (B) 0.246 · The council's preliminary key

Q21 TS EAPCET 2026 · 11 May · Shift 1 MCQ

Given below are two statements

Statement-I: The percent compositions of Ni^{2+} and Ni^{3+} in $Ni_{0.98}O$ is 96% and 4% respectively

Statement-II: The fraction of Fe^{3+} and Fe^{2+} ions in I mole of $Fe_{0.93}O$ is 0.14 and 0.79 respectively

The correct answer is

(A) Both statements I and II are correct
(B) Statement I is correct, but statement II is not correct
(C) Statement I is not correct, but statement II is correct
(D) Both statements I and II are not correct

Answer: (A) Both statements I and II are correct · The council's preliminary key

Q22 TS EAPCET 2026 · 11 May · Shift 2 MCQ

At T(K), the pressure of two ideal gases A and B is in $2:5$ ratio ($p_A : p_B = 2:5$). At this temperature, their density is same. Molar mass ratio ($M_A : M_B$) is

(A) $5:2$
(B) $1:2$
(C) $5:1$
(D) $25:4$

Answer: (A) $5:2$ · The council's preliminary key

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Q23 TS EAPCET 2026 · 11 May · Shift 2 MCQ

A metal crystallizes in cubic lattice with edge length of 4 Å. The number of unit cells of this metal present in $128\ \mathrm{cm}^3$ volume is

(A) 2×10^{24}
(B) 4×10^{24}
(C) 8×10^{24}
(D) 16×10^{24}

Answer: (A) 2×10^{24} · The council's preliminary key

Q24 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If the kinetic energy of the molecules in 8.0 g methane at 47 °C is x kJ, then kinetic energy (in kJ) of the molecules in same amount of dihydrogen at 127°C is

(A) x
(B) $5x$
(C) $10x$
(D) $20x$

Answer: (C) $10x$ · The council's preliminary key

Q25 TS EAPCET 2026 · 10 May · Shift 1 MCQ

Which of the following is not an example of covalent solid?

(A) SiC
(B) $\mathrm{SiO_2}$
(C) AlN
(D) ZnS

Answer: (D) ZnS · The council's preliminary key

Q26 TS EAPCET 2026 · 10 May · Shift 2 MCQ

At 27 °C, the ratio of RMS velocity and most probable velocity of $\mathrm{SO_2}$ is

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

Answer: (A) $\sqrt{3} : \sqrt{2}$ · The council's preliminary key

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Q27 TS EAPCET 2026 · 10 May · Shift 2 MCQ

AB crystalizes in a bcc lattice. If the distance between two oppositely charged ions in the lattice is 335 pm, then the edge length of it (in pm) is

(A) 376.8
(B) 366.8
(C) 386.8
(D) 396.8

Answer: (C) 386.8 · The council's preliminary key

Q28 TS EAPCET 2026 · 9 May · Shift 1 MCQ

2.9 g of a gas (molar mass $40\,\mathrm{g\,mol^{-1}}$) at T(K) occupied the same volume as 0.184 g of dihydrogen at $17\,^{\circ}\mathrm{C}$ at the same pressure. The value of T(K) is

(A) 568
(B) 368
(C) 468
(D) 268

Answer: (B) 368 · The council's preliminary key

Q29 TS EAPCET 2026 · 9 May · Shift 1 MCQ

An element with molar mass $M\,\mathrm{kg\,mol^{-1}}$ forms a face centred cubic unit cell with edge length 405 pm. If the density is $2.7 \times 10^{3}\,\mathrm{kg\,m^{-3}}$. What is its molar mass M?

$(N_A = 6.0 \times 10^{23}\,\mathrm{mol^{-1}})$

(A) 2.59×10^{-1}
(B) 2.49×10^{-2}
(C) 2.69×10^{-2}
(D) 2.89×10^{-1}

Answer: (C) 2.69×10^{-2} · The council's preliminary key

Q30 TS EAPCET 2026 · 9 May · Shift 2 MCQ

A gaseous mixture contains H_2 and O_2. The pressure of the mixture is 1 bar. The weight percentage of O_2 is 80. The ratio of partial pressures of H_2 and O_2 is

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(A) 5
(B) 4
(C) 0.2
(D) 0.25

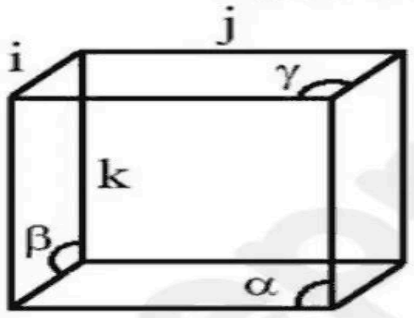
Answer: (B) 4 · The council's preliminary key

Q31 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Identify the edge lengths (a, b, c) in the unit cell shown below

(see the figure above)

Identify the edge lengths (a, b, c) in the unit cell shown below
క్రింద చూపిన యూనిట్ సెల్‌లో అంచు పొడవు (a, b, c) లను గుర్తించండి



Options :

1. $i = a; j = b; k = c$
2. $i = a; j = c; k = b$
3. $i = c; j = b; k = a$
4. $i = b; j = c; k = a$

(A) $i = a; j = b; k = c$
(B) $i = a; j = c; k = b$
(C) $i = c; j = b; k = a$
(D) $i = b; j = c; k = a$

Answer: (A) $i = a; j = b; k = c$ · The council's preliminary key

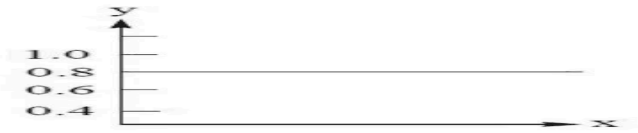
Q32 AP EAPCET 2025 · 27 May · Shift 1 MCQ

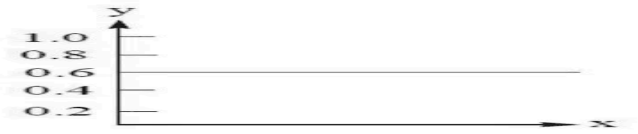
Identify the correct graph for an ideal gas

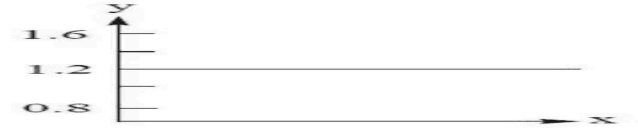
(y-axis = compressibility factor, Z; x-axis = pressure, p)

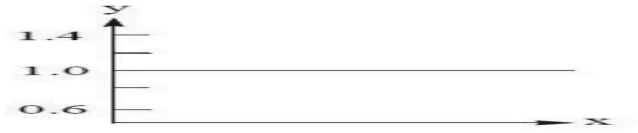
Identify the correct graph for an ideal gas
(y-axis = compressibility factor, Z; x-axis = pressure, p)
అదర్శ వాయువుకు సరియైన గ్రాఫ్‌ని గుర్తించండి.
(y-అక్షం = సంపీడ్యతా గుణకం, Z; x-అక్షం = పీడనం, p)

Options :

1.


2.


3.


4.


(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (D) · The council's preliminary key

Q33 AP EAPCET 2025 · 27 May · Shift 1 MCQ

Identify the correct statements from the following.

I. Glass is an extremely viscous liquid.

II. Increase in temperature decreases the surface tension of liquids.

III. Compressibility factor for an ideal gas is zero.

(A) I, II, III
(B) I, II only
(C) I, III ony
(D) II, III only

Answer: (B) I, II only · The council's preliminary key

Q34 AP EAPCET 2025 · 27 May · Shift 1 MCQ

The crystal system with edge lengths $a \neq b \neq c$ and axial angles $\alpha = \beta = \gamma = 90^\circ$ is 'x' and number of Bravais lattices for it is 'y'. x and y are

(A) Cubic ; 3
(B) Monoclinic; 2
(C) Orthorhombic; 4
(D) Trigonal; 2

Answer: (C) Orthorhombic; 4 · The council's preliminary key

Q35 AP EAPCET 2025 · 26 May · Shift 1 MCQ

2.0 g of H_2 diffuses through a porous container in 10 minutes. How many grams of O_2 would diffuse from the same container in the same time under similar conditions ?

(A) 2.0
(B) 4.0
(C) 16.0
(D) 8.0

Answer: (D) 8.0 · The council's preliminary key

Q36 AP EAPCET 2025 · 26 May · Shift 1 MCQ

At T(K), the u_{rms} of CO_2 is $412\ ms^{-1}$. What is its kinetic energy (in $kJ\ mol^{-1}$) at the same temperature ? (CO_2 = 44 u).

(A) 3.7343
(B) 7.4687
(C) 14.9374
(D) 3734.3

Answer: (A) 3.7343 · The council's preliminary key

Q37 AP EAPCET 2025 · 26 May · Shift 1 MCQ

A metal crystallizes in simple cubic lattice. The radius of the metal atom is x pm. What is the volume of unit cell in pm^3 ?

(A) x^3
(B) $4x^3$
(C) $8x^3$
(D) $16x^3$

Answer: (C) $8x^3$ · The council's preliminary key

Q38 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The correct equation for one mole of a real gas is (a, b are constants)

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(A) $\left(p+\frac{a}{V^2}\right)(V-b)=RT$
(B) $\left(p-\frac{a}{V^2}\right)(V-b)=RT$
(C) $\left(p+\frac{a}{V^2}\right)(V+b)=RT$
(D) $\left(p+\frac{a}{V}\right)(V-b)=RT$

Answer: (A) $\left(p+\frac{a}{V^2}\right)(V-b)=RT$ · The council's preliminary key

Q39 AP EAPCET 2025 · 26 May · Shift 2 MCQ

A and B are ideal gases. At T(K), 2 L of 'A' with a pressure of 1 bar is mixed with 4 L of 'B' with a pressure p_B bar in a 100 L flask. The pressure exerted by gaseous mixture is 0.1 bar. What is the value of p_B in bar ?

(A) 2
(B) 0.04
(C) 0.02
(D) 1

Answer: (A) 2 · The council's preliminary key

Q40 AP EAPCET 2025 · 26 May · Shift 2 MCQ

A metal crystallizes in simple cubic lattice. The volume of one unit cell is 6.4×10^7 pm^3. What is the radius of the metal atom in pm ?

(A) 100
(B) 200
(C) 300
(D) 400

Answer: (B) 200 · The council's preliminary key

Q41 AP EAPCET 2025 · 24 May · Shift 1 MCQ

Consider the following

Statement-I : If thermal energy is stronger than intermolecular forces, the substance prefers to be in gaseous state.

Statement-II : At constant temperature, the density of an ideal gas is proportional to its pressure.

The correct answer is

(A) Statement-I is correct, but Statement-II is not correct
(B) Statement-I is not correct, but Statement-II is correct
(C) Both Statement-I and Statement-II are correct
(D) Both Statement-I and Statement-II are not correct

Answer: (C) Both Statement-I and Statement-II are correct · The council's preliminary key

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Q42 AP EAPCET 2025 · 24 May · Shift 1 MCQ

At $27^{\circ}\mathrm{C}$, 1 L of $\mathrm{H_2}$ with a pressure of 1 bar is mixed with 2 L of $\mathrm{O_2}$ with a pressure of 2 bar in a 10 L flask. What is the pressure exerted by gaseous mixture in bar ? (Assume $\mathrm{H_2}$ and $\mathrm{O_2}$ as ideal gases)

(A) 4
(B) 0.05
(C) 1
(D) 0.5

Answer: (D) 0.5 · The council's preliminary key

Q43 AP EAPCET 2025 · 24 May · Shift 1 MCQ

An element occurs in the body centred cubic structure with edge length of 288 pm. The density of the element is 7.2 g $\mathrm{cm^{-3}}$. The number of atoms present in 208 g of the element is nearly

(A) 24.2×10^{23}
(B) 12.1×10^{23}
(C) 24.2×10^{24}
(D) 36.3×10^{23}

Answer: (A) 24.2×10^{23} · The council's preliminary key

Q44 AP EAPCET 2025 · 23 May · Shift 1 MCQ

At $27\ ^{\circ}\mathrm{C}$ kinetic energy of 4 g of $\mathrm{H_2}$ is x J. What is the kinetic energy (in J) of 6.4 g of oxygen at $127\ ^{\circ}\mathrm{C}$?

(A) $\frac{x}{15}$
(B) $\frac{4x}{15}$
(C) $\frac{8x}{15}$
(D) $\frac{2x}{15}$

Answer: (D) $\frac{2x}{15}$ · The council's preliminary key

Q45 AP EAPCET 2025 · 23 May · Shift 1 MCQ

At T(K), hydrogen and oxygen gases are mixed in the ratio of 1 : 2 by mass in a closed vessel of volume 'V' litres. If the total pressure of gaseous mixture is 'p' atm, the partial pressure of oxygen (in atm) is

(A) $\frac{p}{9}$
(B) $9p$
(C) $\frac{8p}{9}$
(D) $\frac{p}{6}$

Answer: (A) $\frac{p}{9}$ · The council's preliminary key

Q46 AP EAPCET 2025 · 23 May · Shift 1 MCQ

The composition of a sample of wustite is $Fe_{0.93}O_{1.00}$. Percentage of iron in the form of Fe^{3+} ion is nearly

(A) 85
(B) 15
(C) 93
(D) 7

Answer: (B) 15 · The council's preliminary key

Q47 AP EAPCET 2025 · 23 May · Shift 2 MCQ

Choose the incorrect statement from the following

(A) At Boyle temperature a real gas obeys ideal gas law over an appreciable range of pressure
(B) Critical temperature of CO_2 is $27.5^\circ C$
(C) Above critical temperature, a real gas behaves like an ideal gas
(D) At room temperature and 1 atm pressure the compressibility factor (Z) for H_2 gas is greater than 1

Answer: (B) Critical temperature of CO_2 is $27.5^\circ C$ · The council's preliminary key

Q48 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If $AgCl$ is doped with 1×10^{-4} mole percent of $CdCl_2$, the number of cation vacancies (in mol^{-1}) is

(A) 6.023×10^{19}
(B) 6.023×10^{21}
(C) 6.023×10^{17}
(D) 6.023×10^{23}

Answer: (C) 6.023×10^{17} · The council's preliminary key

Q49 AP EAPCET 2025 · 22 May · Shift 1 MCQ

At T(K), a gaseous mixture contains H_2 and O_2. The total pressure of the mixture is 2 bar. The partial pressure of H_2 is 1.778 bar. What is the weight (w/w) percentage of H_2 in the mixture ?

(A) 66.67
(B) 33.33
(C) 80.00
(D) 20.00

Answer: (B) 33.33 · The council's preliminary key

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Q50 AP EAPCET 2025 · 22 May · Shift 1 MCQ

The most probable speed (u_{mp}) of 8 g of H_2 is 2×10^2 ms^{-1}. The kinetic energy (in J) of same amount of H_2 gas is

(A) 480
(B) 240
(C) 720
(D) 120

Answer: (B) 240 · The council's preliminary key

Q51 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A compound is formed by two elements A and B. Atoms of the element B (as anion) make ccp lattice and those of element A (as cation) occupy all tetrahedral voids. The formula of the compound is

(A) A_4B_3
(B) AB
(C) AB_2
(D) A_2B

Answer: (D) A_2B · The council's preliminary key

Q52 AP EAPCET 2025 · 22 May · Shift 2 MCQ

At what temperature (in K) the rms velocity of SO_2 molecules is equal to rms velocity of O_2 molecules at $27^\circ C$.

(A) 300
(B) 1200
(C) 600
(D) 900

Answer: (C) 600 · The council's preliminary key

Q53 AP EAPCET 2025 · 22 May · Shift 2 MCQ

For one mole of an ideal gas an isochore is obtained. The slope of the isochore is 0.082 $atm\ K^{-1}$. What will be its pressure (in atm) when the temperature is 12.2 K? ($R = 0.082$ L $atm\ mol^{-1}\ K^{-1}$).

(A) 10.0
(B) 0.1
(C) 1.0
(D) 0.5

Answer: (C) 1.0 · The council's preliminary key

Q54 AP EAPCET 2025 · 22 May · Shift 2 MCQ

An element (atomic weight = 250 u) crystallises in a simple cubic lattice. If the density of the unit cell is 7.2 g cm^{-3}, what is the radius (in Å) of the atom of the element?

($N = 6.02 \times 10^{23}\ mol^{-1}$)

(A) 4.04
(B) 2.93
(C) 1.93
(D) 3.04

Answer: (C) 1.93 · The council's preliminary key

Q55 AP EAPCET 2025 · 21 May · Shift 1 MCQ

Consider the following

Statement-I : If the intermolecular forces are stronger than thermal energy, the substance prefers to be in gaseous state.

Statement-II : Among all elements, the total number of elements available as gases at room temperature is 10.

The correct answer is

(A) Both statement-I and statement-II are correct
(B) Both statement-I and statement-II are not correct
(C) Statement-I is correct, but statement-II is not correct
(D) Statement-I is not correct, but statement-II is correct

Answer: (B) Both statement-I and statement-II are not correct · The council's preliminary key

Q56 AP EAPCET 2025 · 21 May · Shift 1 MCQ

Identify the conditions at which van der Waals equation of state changes to ideal gas equation.

(A) high temperature and high pressure
(B) low temperature and high pressure
(C) high temperature and low pressure
(D) low temperature and low pressure

Answer: (C) high temperature and low pressure · The council's preliminary key

Q57 AP EAPCET 2025 · 21 May · Shift 1 MCQ

Gold crystallises in fcc lattice. The edge length of the unit cell is 4Å. The closest distance between gold atoms is 'x' Å and density of gold is 'y' g cm^{-3}. What are x and y respectively ?

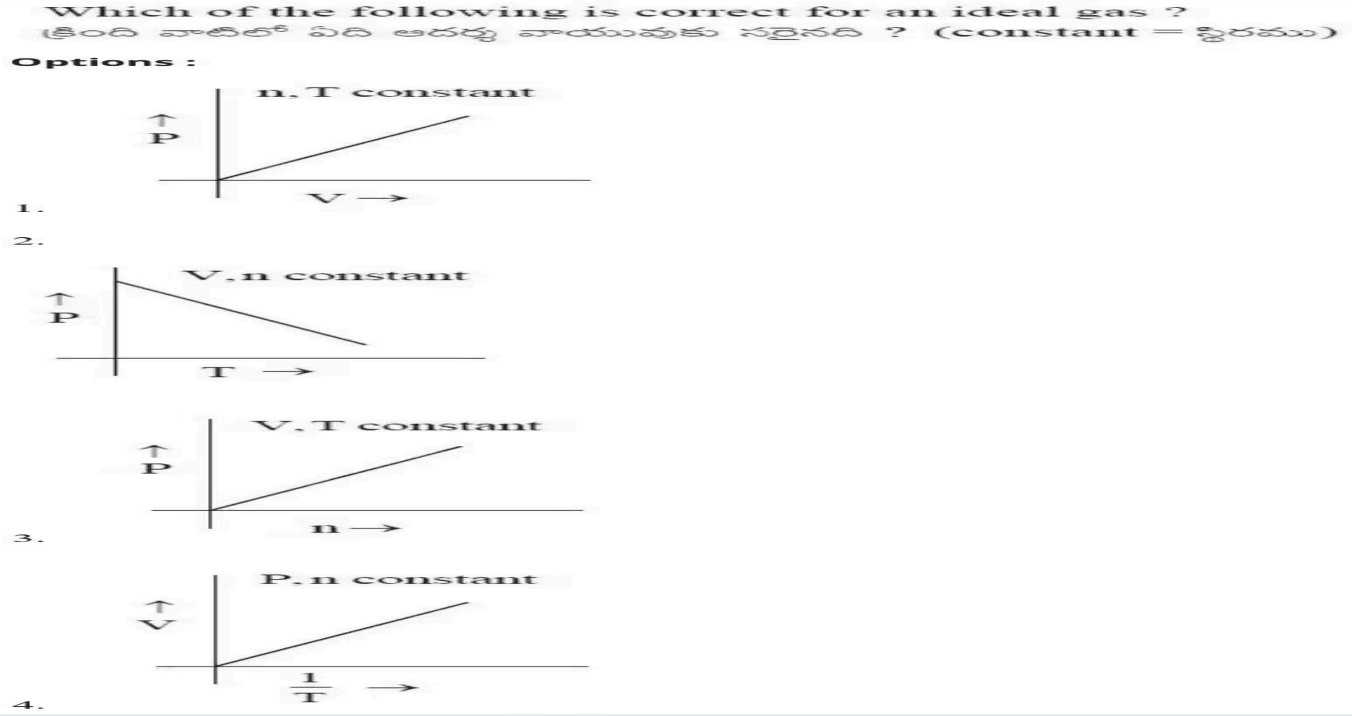
(Molar mass of gold = 197 g mol^{-1}; $N = 6 \times 10^{23}\ mol^{-1}$)

(A) $\sqrt{2}, 41.04$
(B) $2\sqrt{2}, 20.52$
(C) $2\sqrt{3}, 10.25$
(D) $\sqrt{3}, 5.15$

Answer: (B) $2\sqrt{2}, 20.52$ · The council's preliminary key

Q58 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Which of the following is correct for an ideal gas ?



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · The council's preliminary key

Q59 AP EAPCET 2025 · 21 May · Shift 2 MCQ

At 256 K, rms speed of SO_2 gas molecules is 3.16×10^2 ms^{-1}. What is the most probable velocity (in ms^{-1}) of same gas at same temperature ?

(A) 2.911×10^2
(B) 2.58×10^2
(C) 5.16×10^2
(D) 1.29×10^2

Answer: (B) 2.58×10^2 · The council's preliminary key

Q60 AP EAPCET 2025 · 21 May · Shift 2 MCQ

An element crystallizes in bcc lattice. The atomic radius of the element is 2.598Å. What is the volume (in cm^3) of one unit cell ?

(A) 6.4×10^{-22}
(B) 2.16×10^{22}
(C) 2.16×10^{-22}
(D) 2.16×10^{-24}

Answer: (C) 2.16×10^{-22} · The council's preliminary key

Q61 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The force (F) required to maintain the flow of layers of a liquid is equal to

(A = area of contact of layers,
dz = distance between the layers,
du = change in velocity,
η = coefficient of viscosity)

(A) $\eta \frac{du}{dz} \cdot \frac{1}{A}$
(B) $\eta \frac{dz}{du} \cdot A$
(C) $\eta A \frac{du}{dz}$
(D) $\eta \frac{dz}{A} \cdot \frac{1}{du}$

Answer: (C) $\eta A \frac{du}{dz}$ · The council's preliminary key

Q62 TS EAPCET 2025 · 4 May · Shift 1 MCQ

Sodium metal crystallises in a body centred cubic lattice with edge length of x Å. If the radius of the sodium atom is 1.86 Å, the value of x is

(A) 4.29
(B) 3.29
(C) 2.39
(D) 3.93

Answer: (A) 4.29 · The council's preliminary key

Q63 TS EAPCET 2025 · 4 May · Shift 2 MCQ

The isobars of one mole of an ideal gas were obtained at three different pressures (p_1, p_2 and p_3). The slopes of these isobars are m_1, m_2 and m_3 respectively. If $p_1 < p_2 < p_3$, then the correct relation of the slopes is

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(A) $m_1 > m_2 > m_3$
(B) $m_1 < m_2 < m_3$
(C) $m_1 > m_3 > m_2$
(D) $m_1 = m_2 = m_3$

Answer: (A) $m_1 > m_2 > m_3$ · The council's preliminary key

Q64 TS EAPCET 2025 · 4 May · Shift 2 MCQ

A metal (M), crystallizes in fcc lattice with edge length of 4.242 Å. What is the radius of M atom (in Å)?

(A) 1.25
(B) 1.75
(C) 1.5
(D) 1.0

Answer: (C) 1.5 · The council's preliminary key

Q65 TS EAPCET 2025 · 3 May · Shift 1 MCQ

At $T(\mathrm{K})$ root mean square (rms) velocity of argon (molar mass $40\ \mathrm{g\ mol^{-1}}$) is $20\ \mathrm{ms^{-1}}$. The average kinetic energy of the same gas at $T(\mathrm{K})$ (in $\mathrm{J\ mol^{-1}}$) is

(A) 8
(B) 16
(C) 4
(D) 2

Answer: (A) 8 · The council's preliminary key

Q66 TS EAPCET 2025 · 3 May · Shift 1 MCQ

A metal crystallises in two cubic phases, fcc and bcc with edge lengths 3.5 Å and 3 Å respectively. The ratio of densities of fcc and bcc is approximately

(A) 1.36
(B) 1.26
(C) 2.16
(D) 6.13

Answer: (B) 1.26 · The council's preliminary key

Q67 TS EAPCET 2025 · 3 May · Shift 2 MCQ

At 298K, a flask 'A' of unknown volume (V) contains oxygen at 5 atm. Another flask 'B' of volume 2L contains helium at 3 atm. Two flasks are connected together by a small tube of zero volume. After the two gases are completely mixed, if the resulting mixture is found to have the mole fraction of oxygen

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as 0.2, the volume of flask 'A' (in L) is
(Assume oxygen and helium as ideal gases)

(A) 0.1
(B) 0.3
(C) 0.2
(D) 0.4

Answer: (B) 0.3 · The council's preliminary key

Q68 TS EAPCET 2025 · 3 May · Shift 2 MCQ

The incorrect statement about crystals with Schottky defect is

(A) It is due to missing of equal number of cations and anions from lattice points
(B) On the whole crystal is electrically neutral
(C) It is shown by ionic compounds in which cation and anion are of almost same size
(D) Density of the crystal increases

Answer: (D) Density of the crystal increases · The council's preliminary key

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Q69 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The RMS velocity of dihydrogen is $\sqrt{7}$ times more than that of dinitrogen. If T_{H_2} and T_{N_2} are the temperatures of dihydrogen and dinitrogen, then the correct relationship between them is

(A) $T_{H_2} = T_{N_2}$
(B) $T_{H_2} > T_{N_2}$
(C) $T_{H_2} = \sqrt{7} T_{N_2}$
(D) $T_{H_2} = \frac{T_{N_2}}{2}$

Answer: (D) $T_{H_2} = \frac{T_{N_2}}{2}$ · The council's preliminary key

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Q70 TS EAPCET 2025 · 2 May · Shift 1 MCQ

A substance has a density of $2\ \text{g cm}^{-3}$. It crystallizes in the fcc crystal with an edge length of $600\ \text{pm}$. The molar mass of the substance (in g mol^{-1}) is

$(N_A = 6 \times 10^{23}\ \text{mol}^{-1})$

(A) 54.8
(B) 64.8
(C) 74.8
(D) 84.7

Answer: (B) 64.8 · The council's preliminary key

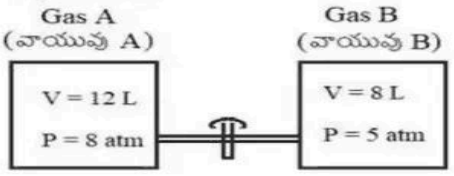
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Q71 TS EAPCET 2025 · 2 May · Shift 2 MCQ

Two vessels are filled with ideal gases A and B and are connected through a pipe of zero volume as shown in figure. The stop cock is opened and the gases are allowed to mix homogeneously and the temperature is kept constant. The partial pressures of A and B respectively (in atm) are

(see the figure above)

Two vessels are filled with ideal gases A and B and are connected through a pipe of zero volume as shown in figure. The stop cock is opened and the gases are allowed to mix homogeneously and the temperature is kept constant. The partial pressures of A and B respectively (in atm) are
ఆదర్శవాయువులు A మరియు B ల తో నింపిన రెండు పాత్రలను శూన్య ఘనపరిమాణం గల ఒక సన్నటి గొట్టం ద్వారా పటంలో చూపిన విధంగా కలిపినారు. బిరడాను తెరిచి వాయువులను స్థిర ఉష్ణోగ్రత వద్ద సజాతీయంగా కలిసేటట్లు చేసారు. A మరియు B ల పాక్షిక పీడనాలు (atm లలో) వరుసగా



Options :
1. 8.0, 5
2. 9.6, 4
3. 6.4, 4
4. 4.8, 2

(A) 8.0, 5
(B) 9.6, 4
(C) 6.4, 4
(D) 4.8, 2

Answer: (D) 4.8, 2 · The council's preliminary key

Q72 TS EAPCET 2025 · 2 May · Shift 2 MCQ

A solid contains elements A and B. Anions of B form ccp lattice. Cations of A occupy 50% of octahedral voids and 50% of tetrahedral voids. What is the molecular formula of the solid?

(A) AB_3
(B) A_3B_2
(C) A_2B_3
(D) AB

Answer: (B) A_3B_2 · The council's preliminary key

Q73 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The rms velocity (u_{rms}), mean velocity (u_{av}) and most probability (u_{mp}) of a gas differ from each other at a given temperature. Which of the following ratios regarding them is correct?

(A) $\frac{u_{rms}}{u_{av}} = 1.20$

(B) $\frac{u_{av}}{u_{mp}} = 1.12$

(C) $\frac{u_{rms}}{u_{mp}} = 1.15$

(D) $\frac{u_{av}}{u_{rms}} = 0.98$

Answer: (B) $\frac{u_{av}}{u_{mp}} = 1.12$ · The council's preliminary key

Q74 AP EAPCET 2024 · 23 May · Shift 1 MCQ

$60\ cm^3$ of SO_2 gas diffused through a porous membrane in 'x' min. Under similar conditions $360\ cm^3$ of another gas (molar mass $4\ g\ mol^{-1}$) diffused in 'y' min. The ratio of x and y is

(A) $3:2$

(B) $2:3$

(C) $1:3$

(D) $3:1$

Answer: (B) $2:3$ · The council's preliminary key

Q75 AP EAPCET 2024 · 23 May · Shift 1 MCQ

A 10 L vessel contains 1 mole of an ideal gas with pressure of P(atm) and temperature of T(K). The vessel is divided into two equal parts. The pressure (in atm) and temperature (in K) in each part is respectively

(A) $\frac{P}{2}, \frac{T}{2}$

(B) $\frac{P}{2}, T$

(C) P, T

(D) $P, \frac{T}{2}$

Answer: (C) P, T · The council's preliminary key

Q76 AP EAPCET 2024 · 23 May · Shift 1 MCQ

The molecular formula of a crystalline solid is X_3Y_2. Atoms of Y form ccp lattice, and atoms of X occupy 50% octahedral voids and x% of tetrahedral voids. What is the percentage of unoccupied tetrahedral voids?

(A) 66.6

(B) 25

(C) 50

(D) 33.3

Answer: (C) 50 · The council's preliminary key

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Q77 AP EAPCET 2024 · 22 May · Shift 1 MCQ

At 240.55 K, for one mole of an ideal gas, a graph of P (on y-axis) and V^{-1} (on x-axis) gave a straight line passing through origin. Its slope (m) is 2000 $\mathrm{J\ mol^{-1}}$. What is the kinetic energy (in $\mathrm{J\ mol^{-1}}$) of ideal gas?

(A) 2000
(B) 3000
(C) 6000
(D) 1500

Answer: (B) 3000 · The council's preliminary key

Q78 AP EAPCET 2024 · 22 May · Shift 1 MCQ

Zinc oxide (white) is heated to high temperature for some time.

Observe the following statement regarding above process

I. Zinc oxide colour changes to pale yellow

II. The type of defect formed is 'metal deficiency'

III. Some $\mathrm{Zn^{2+}}$ and $\mathrm{e^-}$ are present in interstitial places

The correct statements are

(A) I, II only
(B) I, III only
(C) II, III only
(D) I, II, III

Answer: (B) I, III only · The council's preliminary key

Q79 AP EAPCET 2024 · 22 May · Shift 2 MCQ

At $T(K)$ for one mole of an ideal gas, the graph of P (on y-axis) and V^{-1} (on x-axis) gave a straight line with slope of $32.8\ \mathrm{L\ atm\ mol^{-1}}$. What is the temperature (in K)? ($R = 0.082\ \mathrm{L\ atm\ mol^{-1}\ K^{-1}}$)

(A) 600
(B) 200
(C) 800
(D) 400

Answer: (D) 400 · The council's preliminary key

Q80 AP EAPCET 2024 · 22 May · Shift 2 MCQ

A vessel of volume V L contains an ideal gas at T(K). The vessel is partitioned into two equal parts. The volume (in L) and temperature (in K) in each part is respectively

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(A) $V, \frac{T}{2}$
(B) $\frac{V}{2}, T$
(C) V, T
(D) $\frac{V}{2}, \frac{T}{2}$

Answer: (B) $\frac{V}{2}, T$ · The council's preliminary key

Q81 AP EAPCET 2024 · 22 May · Shift 2 MCQ

A compound is formed by atoms of A, B and C. Atoms of C form hcp lattice. Atoms of A occupy 50% of octahedral voids and atoms of B occupy $\frac{2}{3}$rd of tetrahedral voids. What is the molecular formula of the solid?

(A) $A_3B_8C_6$
(B) $A_2B_8C_6$
(C) AB_4C_3
(D) $A_5B_8C_6$

Answer: (A) $A_3B_8C_6$ · The council's preliminary key

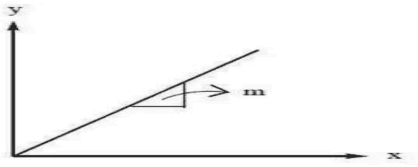
Q82 AP EAPCET 2024 · 21 May · Shift 1 MCQ

The RMS velocity (u_{rms}) of one mole of an ideal gas was measured at different temperatures and the following graph is obtained. What is the slope (m) of straight line?

(x-axis=T(K); y-axis = $(u_{rms})^2$; M = molar mass; R = gas constant)

(see the figure above)

The RMS velocity (u_{rms}) of one mole of an ideal gas was measured at different temperatures and the following graph is obtained. What is the slope (m) of straight line?
(x-axis=T(K); y-axis = $(u_{rms})^2$; M = molar mass; R = gas constant)
వివిధ ఉష్ణోగ్రతల వద్ద ఒక మోల్ ఆదర్శవాయువు RMS వేగాన్ని (u_{rms}) కొలిచారు మరియు క్రింది గ్రాఫ్ లభించింది. సరళరేఖ వాలు (m) ఎంత? (x-axis = T(K); y-axis = $(u_{rms})^2$; M = మోలార్ ద్రవ్యరాశి; R = వాయు స్థిరాంకము)



Options :
1. $\left(\frac{3R}{M}\right)^{1/2}$
2. $\left(\frac{M}{3R}\right)^{1/2}$
3. $\frac{M}{3R}$
4. $\frac{3R}{M}$

(A) $\left(\frac{3R}{M}\right)^{1/2}$
(B) $\left(\frac{M}{3R}\right)^{1/2}$
(C) $\frac{M}{3R}$
(D) $\frac{3R}{M}$

Answer: (D) $\frac{3R}{M}$ · The council's preliminary key

Q83 AP EAPCET 2024 · 21 May · Shift 1 MCQ

Two statements are given below

Statement I: Viscosity of liquid decreases with increase in temperature

Statement II: The units of viscosity coefficient are Pascal sec

The correct answer is

(A) Both statement-I and statement-II are correct
(B) Both statement-I and statement-II are not correct
(C) Statement-I is correct but statement-II is not correct
(D) Statement-I is not correct but statement-II is correct

Answer: (A) Both statement-I and statement-II are correct · The council's preliminary key

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Q84 AP EAPCET 2024 · 21 May · Shift 1 MCQ

What are the variables in the graph of powder diffraction pattern of a crystalline solid?

(A) x-axis = 2θ; y-axis = intensity
(B) x-axis = intensity; y-axis = 2θ
(C) x-axis = θ; y-axis = intensity
(D) x-axis = intensity; y-axis = θ

Answer: (A) x-axis = 2θ; y-axis = intensity · The council's preliminary key

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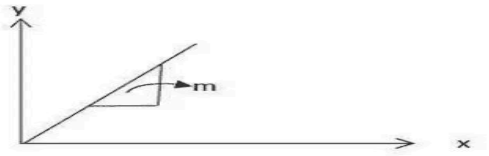
Q85 AP EAPCET 2024 · 21 May · Shift 2 MCQ

At T(K), the P, V and u_{rms} of 1 mole of an ideal gas were measured. The following graph is obtained. What is its slope (m)? (x-axis=PV; y-axis u_{rms}^2; M= Molar mass)

(see the figure above)

At T(K), the P, V and u_{rms} of 1 mole of an ideal gas were measured. The following graph is obtained. What is its slope (m)? (x-axis=PV; y-axis u_{rms}^2, M= Molar mass)

T(K) వద్ద, ఒక మోల్ ఆదర్శ వాయువు కు P, V మరియు u_{rms} లను కొలిచారు. క్రింది గ్రాఫ్ లభించింది. దాని వాలు (m) ఎంత? (x -అక్షం =PV; y -అక్షం = u_{rms}^2; M= మోలార్ ద్రవ్యరాశి)



Options :

1. $\frac{3}{M}$
2. $\frac{M}{3}$
3. $\left(\frac{M}{3}\right)^{1/2}$
4. $\left(\frac{3}{M}\right)^{1/2}$

(A) $\frac{3}{M}$
(B) $\frac{M}{3}$
(C) $\left(\frac{M}{3}\right)^{1/2}$
(D) $\left(\frac{3}{M}\right)^{1/2}$

Answer: (A) $\frac{3}{M}$ · The council's preliminary key

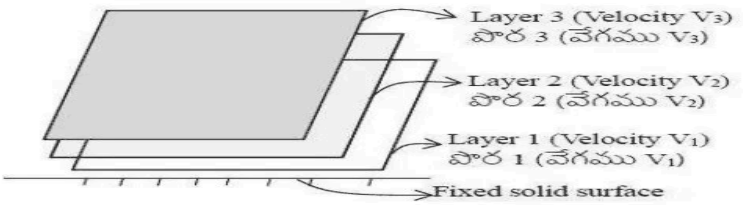
Q86 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Three layers of liquid are flowing over fixed solid surface as shown below. The correct order of velocity of liquid in these layers is

(see the figure above)

Three layers of liquid are flowing over fixed solid surface as shown below. The correct order of velocity of liquid in these layers is

ఒక స్థిర ఘన ఉపరితలం పై ప్రవహించు ద్రవపు మూడు పొరలు క్రింద ఇవ్వబడ్డాయి. ఈ పొరలలో ద్రవపు వేగము పాటించు సరియైన క్రమము



Options :

1. $V_1>V_2>V_3$
2. $V_1=V_2=V_3$
3. $V_3>V_2>V_1$
4. $V_3>V_1>V_2$

(A) $V_1 > V_2 > V_3$
(B) $V_1 = V_2 = V_3$
(C) $V_3 > V_2 > V_1$
(D) $V_3 > V_1 > V_2$

Answer: (C) $V_3 > V_2 > V_1$ · The council's preliminary key

Q87 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Identify the incorrect set from the following

(A) SiO_2, covalent solid, insulator, high melting point
(B) MgO, covalent solid, insulator, high melting point
(C) $H_2O_{(ice)}$, molecular solid, insulator, low melting point
(D) $Ag(s)$, metallic solid, conductor, high melting point

Answer: (B) MgO, **covalent solid, insulator, high melting point** · The council's preliminary key

Q88 AP EAPCET 2024 · 20 May · Shift 1 MCQ

Two statements are given below

Statement-I: The ratio of the molar volume of a gas to that of an ideal gas at constant temperature and pressure is called the compressibility factor.

Statement-II: The RMS velocity of a gas is directly proportional to square root of T(K)

The correct answer is

(A) Both statement-I and statement-II are correct
(B) Both statement-I and statement-II are not correct
(C) Statement-I is correct but statement-II not correct
(D) Statement-I is not correct but statement-II is correct

Answer: (A) Both statement-I and statement-II are correct · The council's preliminary key

Q89 AP EAPCET 2024 · 20 May · Shift 1 MCQ

At 133.33 K, the RMS velocity of an ideal gas is

$(\mathrm{M} = 0.083\ \mathrm{kg\ mol^{-1}}; \mathrm{R} = 8.3\ \mathrm{J\ mol^{-1}\ K^{-1}})$

(A) $200\ \mathrm{m\ s^{-1}}$
(B) $150\ \mathrm{m\ s^{-1}}$
(C) $2000\ \mathrm{m\ s^{-1}}$
(D) $400\ \mathrm{m\ s^{-1}}$

Answer: (A) $200\ \mathrm{m\ s^{-1}}$ · The council's preliminary key

Q90 AP EAPCET 2024 · 20 May · Shift 1 MCQ

A solid compound is formed by atoms of A (cations), B (cations) and O (anions). Atoms of O form hcp lattice. Atoms of A occupy 25% of tetrahedral holes and atoms of B occupy 50% octahedral holes. What is the molecular formula of solid?

(A) $\mathrm{AB_2O_4}$
(B) $\mathrm{ABO_3}$
(C) $\mathrm{ABO_2}$
(D) $\mathrm{A_2BO_4}$

Answer: (C) $\mathrm{ABO_2}$ · The council's preliminary key

Q91 AP EAPCET 2024 · 20 May · Shift 2 MCQ

What is the ratio of kinetic energies of 3 g of hydrogen and 4 g of oxygen at a certain temperature?

(A) $3 : 4$
(B) $6 : 1$
(C) $12 : 1$
(D) $1 : 12$

Answer: (C) $12 : 1$ · The council's preliminary key

Q92 AP EAPCET 2024 · 20 May · Shift 2 MCQ

What is the kinetic energy (in $\mathrm{J\,mol^{-1}}$) of one mole of an ideal gas (molar mass = $0.1\ \mathrm{kg\,mol^{-1}}$) if its rms velocity is $4 \times 10^2\ \mathrm{m\,s^{-1}}$ at T(K)?

(A) 2×10^5
(B) 8×10^4
(C) 8×10^2
(D) 8×10^3

Answer: (D) 8×10^3 · The council's preliminary key

Q93 AP EAPCET 2024 · 20 May · Shift 2 MCQ

The density of β-Fe is $7.6\ \text{g cm}^{-3}$. It crystallizes in cubic lattice with $a = 290\ \text{pm}$. What is the value of Z? ($\text{Fe} = 56\ \text{g mol}^{-1}$; $N_A = 6.022 \times 10^{23}\ \text{mol}^{-1}$)

(A) 2
(B) 1
(C) 4
(D) 6

Answer: (A) 2 · The council's preliminary key

Q94 AP EAPCET 2024 · 19 May · Shift 2 MCQ

Identify the correct statements from the following

I. For an ideal gas, the compressibility factor is 1.0

II. The kinetic energy of NO (g) (molar mass = 30 g mol^{-1}) at T(K) is x J mol^{-1}. The kinetic energy of N_2O_4 (g) (molar mass = 92 g mol^{-1}) at T (K) is $2x$ J mol^{-1}

III. The rate of diffusion of a gas is inversely proportional to square root of its density

(A) I, II, III
(B) II, III only
(C) I, III only
(D) I, II only

Answer: (C) I, III only · The council's preliminary key

Q95 AP EAPCET 2024 · 19 May · Shift 2 MCQ

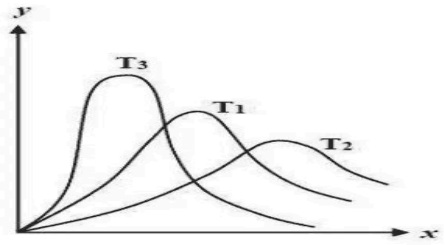
The following graph is obtained for a gas at different temperatures (T_1, T_2, T_3). What is the correct order of temperature? (x-axis = velocity; y-axis = number of molecules)

(see the figure above)

EdLoop EAPCET

The following graph is obtained for a gas at different temperatures (T_1, T_2, T_3). What is the correct order of temperature? (x-axis = velocity; y-axis = number of molecules)

ఒక వాయువుకు వివిధ ఉష్ణోగ్రతల (T_1, T_2, T_3) వద్ద క్రింది గ్రాఫ్ లభించింది. ఉష్ణోగ్రతల సరియైన క్రమము ఏది? (x-అక్షం = వేగం; y-అక్షం = అణువుల సంఖ్య)



Options :

1. $T_2 > T_1 > T_3$
2. $T_2 > T_3 > T_1$
3. $T_3 > T_1 > T_2$
4. $T_3 > T_2 > T_1$

(A) $T_2 > T_1 > T_3$
(B) $T_2 > T_3 > T_1$
(C) $T_3 > T_1 > T_2$
(D) $T_3 > T_2 > T_1$

Answer: (A) $T_2 > T_1 > T_3$ · The council's preliminary key

Q96 AP EAPCET 2024 · 19 May · Shift 2 MCQ

Some substances are given below

Ag; CO_2 (s); SiO_2; ZnS

SO_2 (s); A/N; HCl (s); H_2O (s)

The number of molecular solids and network solids in the above list is respectively

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

Answer: (D) 4, 2 · The council's preliminary key

Q97 AP EAPCET 2024 · 18 May · Shift 1 MCQ

RMS velocity of one mole of an ideal gas was measured at different temperatures. A graph of $(u_{rms})^2$ (on y-axis) and T(K) (on x-axis) gave straight line passing through the origin and its slope is 249 $m^2s^{-2}K^{-1}$. What is the molar mass (in $kg\ mol^{-1}$) of ideal gas? (R=8.3 J $mol^{-1}K^{-1}$)

(A) 10
(B) 1.0
(C) 24.9
(D) 1×10^{-1}

Answer: (D) 1×10^{-1} · The council's preliminary key

Q98 AP EAPCET 2024 · 18 May · Shift 1 MCQ

Given below are two statements

Statement I: Viscosity of liquid decreases with increase in temperature

Statement II: The units of viscosity are $\mathrm{kg\ m^{-1}s^{-2}}$

The correct answer is

(A) Both statement- I and statement- II are correct
(B) Both statement- I and statement- II are not correct
(C) Statement- I is correct but statement- II is not correct
(D) Statement- I is not correct but statement- II is correct

Answer: (C) Statement- I is correct but statement- II is not correct · The council's preliminary key

Q99 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The diffraction pattern of crystalline solid gave a peak at $2\theta = 60^0$. What is the distance (in cm) between the layers which gave this peak?

(λ of X-rays is 1.54Å) ($\sin 30^0 = 0.5$, $\sin 60^0 = 0.866$; n = 1)

(A) 8.89×10^{-9}
(B) 8.89×10^{-1}
(C) 1.54×10^{-8}
(D) 1.54

Answer: (C) 1.54×10^{-8} · The council's preliminary key

Q100 TS EAPCET 2024 · 11 May · Shift 1 MCQ

At what temperature will the RMS velocity of sulphur dioxide molecules at 400 K be the same as the most probable velocity of oxygen molecules?

(A) 600 K
(B) 200 K
(C) 400 K
(D) 300 K

Answer: (D) 300 K · The council's preliminary key

Q101 TS EAPCET 2024 · 11 May · Shift 1 MCQ

In bcc lattice containing X and Y type of atoms, X type of atoms are present at the corners and Y type of atoms are present at the centers. In its unit cell, if three atoms are missing in the corners, the formula of the compound is

(A) X_5Y_8
(B) X_8Y_5
(C) X_3Y_5
(D) X_5Y_3

Answer: (A) X_5Y_8 · The council's preliminary key

Q102 TS EAPCET 2024 · 10 May · Shift 1 MCQ

At 400 K, an ideal gas is enclosed in a $0.5\ m^3$ vessel at a pressure of 203 kPa. What is the change in temperature required (in K), if it occupies a volume of $0.2\ m^3$ under a pressure of 304 kPa? (Nearest integer)

(A) 240
(B) 160
(C) 120
(D) 80

Answer: (B) 160 · The council's preliminary key

Q103 TS EAPCET 2024 · 10 May · Shift 1 MCQ

An element with molar mass $2.7 \times 10^{-2}\ kg\ mol^{-1}$ forms a cubic unit cell with edge length of 405 pm. If its density is $2.7 \times 10^3\ kg\ m^{-3}$, the number of atoms present in one unit cell of it is
(Given; $N_A = 6.023 \times 10^{23}\ mol^{-1}$)

(A) 2
(B) 4
(C) 6
(D) 12

Answer: (B) 4 · The council's preliminary key

Q104 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The variation of volume of an ideal gas with its number of moles (n) is obtained as a graph at 300 K and 1 atm pressure. What is the slope of the graph?

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(A) 24.6 L
(B) $24.6\ \mathrm{L\,mol^{-1}}$
(C) $\frac{1}{24.6}\ \mathrm{L^{-1}}$
(D) $\frac{1}{24.6}\ \mathrm{L^{-1}mol}$

Answer: (B) $24.6\ \mathrm{L\,mol^{-1}}$ · The council's preliminary key

Q105 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The molecular formula of a crystal is $\mathrm{AB_2O_4}$. Oxygen atoms form ccp lattice. Atoms of A occupy x % of tetrahedral voids and atoms of B occupy y % of octahedral voids. x and y are respectively

(A) 12.5%, 50%
(B) 50%, 12.5%
(C) 33.3%, 66.6%
(D) 66.6%, 33.3%

Answer: (A) 12.5%, 50% · The council's preliminary key

Q106 TS EAPCET 2024 · 9 May · Shift 1 MCQ

An open vessel containing air was heated from 27 °C to 727 °C. Some air was expelled. What is the fraction of air remaining in the vessel?
(Assume air as an ideal gas)

(A) $\frac{1}{10}$
(B) $\frac{7}{10}$
(C) $\frac{3}{10}$
(D) $\frac{9}{10}$

Answer: (C) $\frac{3}{10}$ · Checked by our team

Q107 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The molecular formula of a compound is $\mathrm{AB_2O_4}$. Atoms of O form ccp lattice. Atoms of A (cation) occupy $\frac{1}{8}$th of tetrahedral voids. Atoms of B (cation) occupy a fraction of octahedral voids. What is the fraction of vacant octahedral voids?

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

Answer: (D) $\frac{1}{2}$ · The council's preliminary key

Q108 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Identify the correct statement about the crystal defects in solids

(A) Frenkel defect is favoured when the difference between sizes of cation and anion is very small
(B) Frenkel defect is not a dislocation effect
(C) Schottky defects have no effect on physical properties of solids
(D) Trapping of electrons in lattice leads to the formation of F-centres

Answer: (D) Trapping of electrons in lattice leads to the formation of F-centres · The council's preliminary key

Q109 AP EAPCET 2023 · 19 May · Shift 1 MCQ

At 200 K, an ideal gas (X) present in a 1 L flask has a concentration of 1 mol L^{-1}. At the same temperature, 0.1 mole of X is added into the vessel. What is the final pressure of the gas in atm?

(Given R = 0.082 L atm mol^{-1} K^{-1})

(A) 18.04
(B) 16.4
(C) 8.2
(D) 9.02

Answer: (A) 18.04 · The council's preliminary key

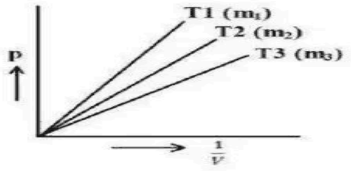
Q110 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The isotherms of an ideal gas at T_1, T_2, T_3 along with their slopes (m) (in the brackets) are shown here. If $T_1 > T_2 > T_3$, then the correct order of slopes of these isotherms is

(see the figure above)

The isotherms of an ideal gas at T_1, T_2, T_3 along with their slopes (m) (in the brackets) are shown here. If $T_1 > T_2 > T_3$, then the correct order of slopes of these isotherms is

T_1, T_2 మరియు T_3 ల వద్ద ఒక ఆదర్శ వాయువు సమోష్ణ రేఖలు వాటి వాలు (m) లతో (బ్రాకెట్లలో) చూప బడ్డాయి. $T_1 > T_2 > T_3$ అయితే, వాటి వాలుల సరియైన క్రమము ఏది?



Options :

1. $m_2 > m_1 > m_3$
2. $m_3 > m_2 > m_1$
3. $m_2 > m_3 > m_1$
4. $m_1 > m_2 > m_3$

(A) $m_2 > m_1 > m_3$
(B) $m_3 > m_2 > m_1$
(C) $m_2 > m_3 > m_1$
(D) $m_1 > m_2 > m_3$

Answer: (D) $m_1 > m_2 > m_3$ · The council's preliminary key

Q111 AP EAPCET 2023 · 19 May · Shift 1 MCQ

In a A_xB_y crystal structure, A^{+y} ions occupy all the tetrahedral voids and B^{-x} ions make BCC unit cell. What is the formula of the compound?

(A) A_4B_2
(B) A_2B_4
(C) A_2B_2
(D) A_4B_4

Answer: (A) A_4B_2 · The council's preliminary key

Q112 AP EAPCET 2023 · 18 May · Shift 1 MCQ

The vapors of 1 g of an element occupy 2.5625 L exerting a pressure of 0.5 atm at 1000 K. What is the molar mass (in $g\ mol^{-1}$) of the element?

(Assume vapors follow ideal gas equation. Given $R = 0.082\ L\ atm\ mol^{-1}\ K^{-1}$)

(A) 64
(B) 16
(C) 32
(D) 128

Answer: (A) 64 · The council's preliminary key

Q113 AP EAPCET 2023 · 18 May · Shift 1 MCQ

A gas obeys Charles law in the temperature range 0-500 K at a given pressure. Its volume changes to zero at temperature of

(A) 273.15°C
(B) 0 °C
(C) -273.15°C
(D) 500 K

Answer: (C) -273.15°C · The council's preliminary key

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Q114 AP EAPCET 2023 · 18 May · Shift 1 MCQ

Silver forms CCP structure and it's density is 10.5 $\mathrm{g/cm^3}$. What is the edge length of unit cell. (molar mass of silver is 107.9 g/mol)

(A) $\sqrt[3]{0.68}\ \overset{0}{\mathrm{A}}$

(B) $\sqrt[3]{48}\ \overset{0}{\mathrm{A}}$

(C) $\sqrt[3]{68.1}\ \overset{0}{\mathrm{A}}$

(D) $\sqrt[3]{680}\ \overset{0}{\mathrm{A}}$

Answer: (C) $\sqrt[3]{68.1}\ \overset{0}{\mathrm{A}}$ · The council's preliminary key

Q115 AP EAPCET 2023 · 18 May · Shift 2 MCQ

At T (K), a gaseous mixture of $\mathrm{H_2}$ and $\mathrm{O_2}$ containing 20% (weight/weight) of $\mathrm{H_2}$ exerts a total pressure of 2 bar. What is the partial pressure of $\mathrm{O_2}$ (in bar)?

(A) 0.2

(B) 0.1

(C) 0.4

(D) 0.6

Answer: (C) 0.4 · The council's preliminary key

Q116 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The following data is obtained for one mole of a gas

The gas behaves as an ideal gas in the pressure range (in bar)

P (bar)	$\frac{PV}{RT}$
1	1
2	1
3	1
4	1.5
5	2.0

(A) 1 to 3

(B) 1 to 5

(C) 4 to 5

(D) above 5

Answer: (A) 1 to 3 · The council's preliminary key

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Q117 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Which one of the following is a semiconductor?

(A) Fe
(B) Ge
(C) Diamond
(D) Cu

Answer: (B) Ge · The council's preliminary key

Q118 AP EAPCET 2023 · 17 May · Shift 1 MCQ

At T (K), an ideal gas (Z) present in V L flask exerted a pressure of 16.4 atm. Its concentration is 1 mol L^{-1}. What is the value of T in K?

(A) 100
(B) 400
(C) 300
(D) 200

Answer: (D) 200 · The council's preliminary key

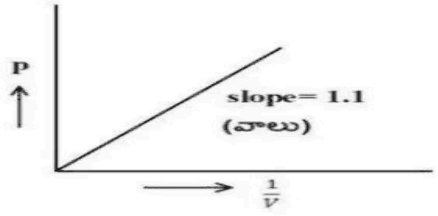
Q119 AP EAPCET 2023 · 17 May · Shift 1 MCQ

At 300 K, the following graph is obtained for one mole of an ideal gas. If its pressure is 10 atm, then its volume (in L) will be

(see the figure above)

At 300 K, the following graph is obtained for one mole of an ideal gas. If its pressure is 10 atm, then its volume (in L) will be

300 K వద్ద, ఒక మోల్ ఆదర్శ వాయువునకు క్రింది గ్రాఫ్ లభించింది. దాని పీడనము 10 atm అయితే దాని ఘనపరిమాణం (L లలో) ఎంత?



Options :

1. 0.11
2. 1.1
3. 2.0
4. 4.0

(A) 0.11
(B) 1.1
(C) 2.0
(D) 4.0

Answer: (A) 0.11 · The council's preliminary key

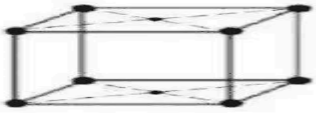
Q120 AP EAPCET 2023 · 17 May · Shift 1 MCQ

The given unit cell belongs to the type

(see the figure above)

The given unit cell belongs to the type

ఇచ్చిన యూనిట్ సెల్ ఈ రకంనకు చెందుతుంది



Options :

1. Primitive unit cell
ప్రాథమిక యూనిట్ సెల్

2. Body centred unit cell
అంతఃకేంద్రిత యూనిట్ సెల్

3. Face centred unit cell
ఫలక కేంద్రిత యూనిట్ సెల్

4. End centred unit cell
అంత్య కేంద్రిత యూనిట్ సెల్

(A) Primitive unit cell
(B) Body centred unit cell
(C) Face centred unit cell
(D) End centred unit cell

Answer: (D) End centred unit cell · The council's preliminary key

Q121 AP EAPCET 2023 · 17 May · Shift 2 MCQ

At T (K), a gaseous mixture containing H_2, He and O_2 exerted a pressure of 1 bar. The weight percentage of H_2 and He is 20 and 16 respectively. The partial pressure (in bar) of H_2, He and O_2 is respectively

(A) 0.625, 0.250, 0.125
(B) 0.625, 0.125, 0.250
(C) 0.250, 0.125, 0.625
(D) 0.125, 0.250, 0.625

Answer: (A) 0.625, 0.250, 0.125 · The council's preliminary key

Q122 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The following data is obtained for one mole of a gas

The gas deviates from ideal behavior in the pressure (in bar) range

P (bar)	$\frac{PV}{RT}$
1	1
2	1
3	1
3.1	1.2
3.5	1.4
4.0	1.5

(A) 1 to 3
(B) 2 to 4
(C) 3.1 to 4.0
(D) 1 to 4

Answer: (C) 3.1 to 4.0 · The council's preliminary key

Q123 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The formula of nickel oxide is $\mathrm{Ni}_{0.98}\mathrm{O}_{1.00}$. What is the approximate percentage of Ni^{+2} in it?

(A) 92
(B) 94
(C) 96
(D) 98

Answer: (C) 96 · The council's preliminary key

Q124 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Identify the correct statements from the following

(A) The compressibility factor (Z) for an ideal gas is 1

(B) Urananium isotopes ($^{235}\mathrm{U}$ and $^{238}\mathrm{U}$) are separated by converting them into UF_6 vapours

(C) Decrease in temperature increases the kinetic energy of gas molecules

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(A) A, B, C
(B) A, C only
(C) B, C only
(D) A, B only

Answer: (D) A, B only · The council's preliminary key

Q125 AP EAPCET 2023 · 16 May · Shift 1 MCQ

At a given temperature, the density of an ideal gas is proportional to

(P = pressure of ideal gas)

(A) $\frac{1}{P}$
(B) P
(C) P^2
(D) $\sqrt{P}$

Answer: (B) P · The council's preliminary key

Q126 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Out of seven crystal systems, how many have face-centred unit cells?

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

Answer: (B) 2 · The council's preliminary key

Q127 AP EAPCET 2023 · 16 May · Shift 2 MCQ

At 300 K, the compressibility factor of 1 mole of a gas is 1.1. Its pressure is 2.706 atm. What is its volume in L?

(Given $R = 0.082\ \text{L atm mol}^{-1}\ \text{K}^{-1}$).

(A) 1
(B) 10
(C) 100
(D) 0.1

Answer: (B) 10 · The council's preliminary key

Q128 AP EAPCET 2023 · 16 May · Shift 2 MCQ

At T (K) and pressure P, the diffusion rate of an ideal gas is 120 mL min^{-1}. What is the time taken (in sec.) for 3000 mL of this gas for diffusion at same temperature and pressure?

(A) 25
(B) 1500
(C) 250
(D) 150

Answer: (B) 1500 · The council's preliminary key

Q129 AP EAPCET 2023 · 16 May · Shift 2 MCQ

In the x-ray reflection (n=1), the distance between two parallel planes of NaCl is 280 pm and diffraction angle is 5.2°. What is the wavelength of it's light radiation (Sin 5.2° = 0.09)

(A) $0.504\ \mathrm{A}^{\circ}$
(B) $5.04\ \mathrm{A}^{\circ}$
(C) $50.4\ \mathrm{A}^{\circ}$
(D) $504\ \mathrm{A}^{\circ}$

Answer: (A) $0.504\ \mathrm{A}^{\circ}$ · The council's preliminary key

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Q130 AP EAPCET 2023 · 15 May · Shift 1 MCQ

An ideal gas (X) present in a vessel of volume V L exerted a pressure of 16.4 atm at 200 K. What is its concentration in $\mathrm{mol\ L^{-1}}$?

(Given R = 0.082 $\mathrm{L\ atm\ mol^{-1}\ K^{-1}}$)

(A) 0.50
(B) 0.25
(C) 1.00
(D) 1.50

Answer: (C) 1.00 · The council's preliminary key

Q131 AP EAPCET 2023 · 15 May · Shift 1 MCQ

A 100 L cylinder containing $\mathrm{H_2}$ exerted a pressure of 4 atm at 300 K. It was accidentally opened and some $\mathrm{H_2}$ was escaped. When it was closed, it exerted a pressure of 3 atm at 300 K. The number of moles of $\mathrm{H_2}$ remaining in the cylinder is equal to

(Assume $\mathrm{H_2}$ as an ideal gas; R = gas constant)

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

Answer: (C) $\frac{1}{R}$ · The council's preliminary key

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Q132 AP EAPCET 2023 · 15 May · Shift 1 MCQ

An example for network solid is

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

Answer: (A) SiO_2 · The council's preliminary key

Q133 AP EAPCET 2023 · 15 May · Shift 2 MCQ

At 300 K, one mole of a gas present in a 10 L flask exerted a pressure of 2.706 atm. What is its compressibility factor (Z)?

(Given R = 0.082 L atm mol^{-1} K^{-1}).

(A) 1.0
(B) 1.5
(C) 0.91
(D) 1.1

Answer: (D) 1.1 · The council's preliminary key

Q134 AP EAPCET 2023 · 15 May · Shift 2 MCQ

At T (K), equal weights of H_2, D_2, and T_2 are present in closed vessel. The pressure exerted by this gaseous mixture is P atm. The ratio of partial pressures of T_2, D_2 and H_2 is approximately

(H, D and T are isotopes of hydrogen).

(A) $0.33 : 0.33 : 0.33$
(B) $0.18 : 0.27 : 0.54$
(C) $0.25 : 0.50 : 0.25$
(D) $0.54 : 0.27 : 0.18$

Answer: (B) $0.18 : 0.27 : 0.54$ · The council's preliminary key

Q135 AP EAPCET 2023 · 15 May · Shift 2 MCQ

In A_xB_y crystal structure, A atoms occupied all octahedral as well as all tetrahedral voids and B atoms are at FCC centres. What is the formula of compound A_xB_y,

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(A) AB_3
(B) $A_{10}B_3$
(C) $A_{15}B_{36}$
(D) A_3B

Answer: (D) A_3B · The council's preliminary key

Q136 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The rate of diffusion of a gas A is $\sqrt{5}$ times more than that of gas B. If the molar mass of A is $x\ \mathrm{g\ mol^{-1}}$, the molar mass of B (in $\mathrm{g\ mol^{-1}}$) is

(A) $4x$
(B) $5x$
(C) $16x$
(D) $25x$

Answer: (B) $5x$ · The council's preliminary key

Q137 TS EAMCET 2023 · 14 May · Shift 1 MCQ

The formula of a metal oxide is $M_{0.96}O_1$. The fractions of metal that exists as M^{3+} and M^{2+} ions in that oxide are respectively

(A) 0.083, 0.916
(B) 0.916, 0.083
(C) 0.88, 0.12
(D) 0.12, 0.88

Answer: (A) 0.083, 0.916 · The council's preliminary key

Q138 TS EAMCET 2023 · 14 May · Shift 2 MCQ

Two containers A and B contain CO_2 gas. Pressure, volume and absolute temperature of the gas in A are 4 times more compared to that in B. The mass of the gas in B is x g, then the mass of the gas in A will be

(A) $\frac{x}{2}$ g
(B) $4x$ g
(C) $2x$ g
(D) $16x$ g

Answer: (B) $4x$ g · The council's preliminary key

Q139 TS EAMCET 2023 · 14 May · Shift 2 MCQ

In the structure of a solid, W atoms are located at the cube corners of the unit cell, O atoms are located at the cube edges and Na atoms at the cube centres. The formula of the compound is

(A) $\mathrm{Na\ WO_3}$
(B) $\mathrm{Na\ WO_2}$
(C) $\mathrm{Na_2\ W_2O_2}$
(D) $\mathrm{Na_2\ WO_3}$

Answer: (A) $\mathrm{Na\ WO_3}$ · The council's preliminary key

Q140 TS EAMCET 2023 · 13 May · Shift 1 MCQ

The ratio of rates of diffusion of gases X and Y of molecular weights 36 and 64 is

(A) $9 : 16$
(B) $3 : 4$
(C) $4 : 3$
(D) $16 : 9$

Answer: (C) $4 : 3$ · The council's preliminary key

Q141 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A body centred cubic lattice is made up of two different types of atoms X and Y. Atom X occupies the body centre and atoms Y occupy the corner positions. One of the corners is left unoccupied per unit cell. The empirical formula of it is

(A) $\mathrm{X_2Y_3}$
(B) $\mathrm{X_8Y_7}$
(C) $\mathrm{X_7Y_8}$
(D) $\mathrm{X_5Y_7}$

Answer: (B) $\mathrm{X_8Y_7}$ · The council's preliminary key

Q142 TS EAMCET 2023 · 13 May · Shift 2 MCQ

4 g of an ideal gas A (molar mass = $\mathrm{M_A}$) present in a vessel of volume V litre exerted a pressure of 5 atm at 300 K. When 16 g of another ideal gas B (molar mass = $\mathrm{M_B}$) was introduced into this vessel at the same temperature, its pressure increased to 10 atm. What is the correct relationship between $\mathrm{M_A}$ and $\mathrm{M_B}$?

(A) $\mathrm{M_A = 4\ M_B}$
(B) $\mathrm{M_A = M_B}$
(C) $\mathrm{M_A = 2\ M_B}$
(D) $\mathrm{4\ M_A = M_B}$

Answer: (D) $\mathrm{4\ M_A = M_B}$ · The council's preliminary key

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Q143 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A compound is formed by elements A, B and O. Atoms of oxygen form ccp lattice. Atoms of A (cation) occupy $\frac{1}{8}$th of tetrahedral voids and atoms of B (cation) occupy half of octahedral voids. What is the molecular formula of the compound?

(A) A_2BO_4
(B) ABO_2
(C) AB_2O_4
(D) ABO_3

Answer: (C) AB_2O_4 · The council's preliminary key

Q144 TS EAMCET 2023 · 12 May · Shift 1 MCQ

At 300K and 760 torr pressure, the density of a mixture of He and O_2 gases is $0.543\ gL^{-1}$.

The mass percent of oxygen approximately is

$(R = 0.0821\ L\ atm\ K^{-1}mol^{-1})$

(A) 33
(B) 80
(C) 20
(D) 67

Answer: (B) 80 · The council's preliminary key

Q145 TS EAMCET 2023 · 12 May · Shift 1 MCQ

At T(K), copper (atomic mass = 63.5 u) has fcc structure with an edge length of x Å. The density of copper (in $g\ cm^{-3}$) at that temperature approximately is

$(N_A = 6.0 \times 10^{23}\ mol^{-1})$

(A) $\frac{423}{x}$
(B) $\frac{4.23}{x^3}$
(C) $\frac{423}{x^3}$
(D) $\frac{212.5}{x^3}$

Answer: (C) $\frac{423}{x^3}$ · The council's preliminary key

Q146 TS EAMCET 2023 · 12 May · Shift 2 MCQ

Certain volume of oxygen gas diffuses through a porous pot in 20 seconds. Same volume of another gas (X) diffuses in Y seconds as that of oxygen, then (X) and Y respectively are

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(A) H_2, 5
(B) He, 10
(C) CO, 30
(D) CO_2, 40

Answer: (A) H_2, 5 · The council's preliminary key

Q147 TS EAMCET 2023 · 12 May · Shift 2 MCQ

Identify the crystal system in which primitive unit cell has edge lengths $a = b = 200$ pm and $c = 300$ pm and all axial angles are same

(A) Tetragonal
(B) Rhombohedral
(C) Monoclinic
(D) Cubic

Answer: (A) Tetragonal · The council's preliminary key

Q148 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

The rate of diffusion of methane at 1.0 atm pressure is twice than that of another gas 'X' kept at 1.45 atm. The molecular mass of the gas 'X' is [T kept constant]

(A) 44
(B) 32
(C) 28
(D) 21

Answer: (A) 44 · The council's preliminary key

Q149 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

Which of the following gases has the maximum van der Waal's constant 'a'?

(A) H_2
(B) He
(C) CO_2
(D) NH_3

Answer: (D) NH_3 · The council's preliminary key

Q150 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

KBr has rock salt type structural arrangements and has a density of 3.70 g/cm^3. The edge length of the unit cell is approximately [molecular weight of KBr =120 g/mol]

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(A) 3×10^{-8} cm
(B) 12×10^{-8} cm
(C) 9×10^{-8} cm
(D) 6×10^{-8} cm

Answer: (D) 6×10^{-8} **cm** · The council's preliminary key

Q151 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

1 mole of a real gas is kept at high pressure of 100 bar at 300 K. If van der Waals constant b is 0.005 L / mol, what are the values of compressibility factor Z of the gas and % deviation of volume from ideality?

(A) Z 1.10, % Deviation 10
(B) Z 1.2, % Deviation 20
(C) Z 1. 02, % Deviation 2
(D) Z 1.2, % Deviation 15

Answer: (C) Z 1. 02, % Deviation 2 · The council's preliminary key

Q152 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

1 L closed flask contains a mixture of 4 g of methane and 4.4 g of carbon dioxide. The pressure inside the flask at 27 °C is [Assume ideal behaviour of gases]

(A) 8.6 atm
(B) 2.2 atm
(C) 4.2 atm
(D) 6.1 atm

Answer: (A) 8.6 atm · The council's preliminary key

Q153 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A solid has a structure in which 'W' atoms are located at the corners of a cubic lattice, oxygen atoms at the edge centre and Na atom at the body centre. The formula of the compound is

(A) $NaWO_2$
(B) Na_2WO_3
(C) $NaWO_3$
(D) $NaWO_4$

Answer: (C) $NaWO_3$ · The council's preliminary key

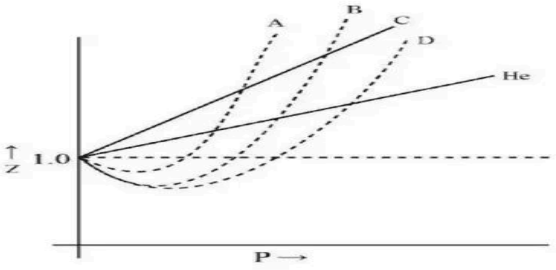
Q154 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A plot of the compressibility factor (z) vs P is shown below for H_2, He, N_2, CO_2 and SO_2. Identify the plot for CO_2 gas.

(see the figure above)

0
Correct Marks : 1 Wrong Marks : 0

A plot of the compressibility factor (z) vs P is shown below for H_2, He, N_2, CO_2 and SO_2. Identify the plot for CO_2 gas.



Options :

1. A
2. B
3. C
4. D

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

Answer: (B) B · Checked by our team

Q155 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

The number of nearest neighbours in a BCC unit cell is

(A) 12
(B) 8
(C) 6
(D) 4

Answer: (B) 8 · Checked by our team

Q156 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The compressibility factor of a real gas at high pressure is

(A) 1
(B) $1+\frac{RT}{Pb}$
(C) $1-\frac{RT}{Pb}$
(D) $1+\frac{Pb}{RT}$

Answer: (D) $1+\frac{Pb}{RT}$ · The council's preliminary key

Q157 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The compressibility factor (z) is lower for NH_3 and CO_2 gases than that of N_2 gas, because

(A) van der Waals constants 'a' of CO_2 and NH_3 are greater than that of N_2

(B) van der Waals constants 'a' of CO_2 and NH_3 are less than that of N_2

(C) 'a' $(NH_3) >$ 'a' (N_2) but 'a' $(CO_2) <$ 'a' (N_2)

(D) 'a' $(NH_3) <$ 'a' (N_2) but 'a' $(CO_2) >$ 'a' (N_2)

Answer: (A) van der Waals constants 'a' of CO_2 and NH_3 are greater than that of N_2 · The council's preliminary key

Q158 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

If the length of the body diagonal of a FCC unit cell is x Å, the distance between two octahedral voids in the cell in Å is

(A) $\frac{x}{\sqrt{2}}$

(B) $\frac{x}{\sqrt{3}}$

(C) $\frac{x}{\sqrt{6}}$

(D) $\frac{x}{\sqrt{8}}$

Answer: (C) $\frac{x}{\sqrt{6}}$ · The council's preliminary key

Q159 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

Gases deviate from ideal behaviour at high pressures because the gas molecules

(A) attract each other

(B) repel each other

(C) show Brownian motion

(D) obey Tyndall effect

Options (1) or (2) were accepted. More than one answer was accepted. · The council's preliminary key

Q160 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

According to kinetic molecular theory of gases, which of the following statements are correct?
a) The actual volume of the molecules is negligible in comparison to the empty space between them.
b) Collisions of gas molecules are inelastic.
c) At any particular time, different particles in the gas have same speed and same kinetic energies.
d) Pressure is exerted by the gas as a result of collision of the particles with the walls of the container.

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(A) a and b only
(B) a, b and c only
(C) a and d only
(D) a, b, c and d

Answer: (C) a and d only · The council's preliminary key

Q161 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

Iron crystalizes in FCC with an edge length of 400 pm. If it contains 0.1 % Schottky defects, calculate its approximate density [AW of Fe = 56 g/mol]

(A) $5.8\ \mathrm{g/cm^3}$
(B) $1.5\ \mathrm{g/cm^3}$
(C) $2.9\ \mathrm{g/cm^3}$
(D) $8.5\ \mathrm{g/cm^3}$

Answer: (A) $5.8\ \mathrm{g/cm^3}$ · The council's preliminary key

Q162 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A gaseous mixture of 2 moles of A, 3 moles of B, 5 moles of C and 10 moles of D contained in a vessel. Assuming that gases are ideal and partial pressure of C is 1.5 atm, the total pressure is

(A) 15 atm
(B) 10 atm
(C) 3 atm
(D) 6 atm

Answer: (D) 6 atm · The council's preliminary key

Q163 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

The correct option for axial distances and axial angles for hexagonal crystal system is

(A) $a \neq b \neq c,\ \alpha \neq \beta \neq \gamma = 90^\circ$
(B) $a = b \neq c,\ \alpha = \beta = \gamma = 90^\circ$
(C) $a = b \neq c,\ \alpha = \beta = 90^\circ,\ \gamma = 120^\circ$
(D) $a \neq b \neq c,\ \alpha = \beta = \gamma = 90^\circ$

Answer: (C) $a = b \neq c,\ \alpha = \beta = 90^\circ,\ \gamma = 120^\circ$ · The council's preliminary key

Q164 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

What is the density of one mole of He (molar mass = 4 g $\mathrm{mol^{-1}}$) at 300 K and a pressure of 0.82 atm? (R = 0.082 L atm $\mathrm{mol^{-1}\ K^{-1}}$)

(A) $1.33 \times 10^{-2}\ \mathrm{g\,mL^{-1}}$
(B) $1.33 \times 10^{-2}\ \mathrm{g\,L^{-1}}$
(C) $1.33 \times 10^{-1}\ \mathrm{g\,L^{-1}}$
(D) $1.33 \times 10^{-1}\ \mathrm{g\,mL^{-1}}$

Answer: (C) $1.33 \times 10^{-1}\ \mathrm{g\,L^{-1}}$ · The council's preliminary key

Q165 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

The crystal structure of an element has fcc lattice. If the edge length of the crystal is $4\ ^{\circ}A$, what is the atomic weight (in g mol^{-1}) of the element, if the density of the crystal is 11.21 g cm^{-3}) (N_A = 6.023 X 10^{23} mol^{-1})

(A) 63.5
(B) 85.5
(C) 108.0
(D) 197.0

Answer: (C) 108.0 · The council's preliminary key

Q166 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

Match List I with List II

List I (Type of solid): A. Metallic; B. Ionic; C. Molecular; D. Covalent
List II (Example): 1. Diamond; 2. Ice; 3. NaCl; 4. Cu

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

Answer: (A) A-4, B-3, C-2, D-1 · The council's preliminary key

Q167 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

300 mL of a gas 'x' of molar mass $32\ \mathrm{g\,mol^{-1}}$ is effused in 25 seconds. What volume of methane would effuse in the same time?

(A) $624\ \mathrm{mL}$
(B) $524\ \mathrm{mL}$
(C) $32\ \mathrm{mL}$
(D) $424\ \mathrm{mL}$

Answer: (D) $424\ \mathrm{mL}$ · The council's preliminary key

Q168 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

The density of methane is maximum under which conditions?

(A) $0\ ^\circ\mathrm{C},\ 2\ \mathrm{bar}$
(B) $273\ ^\circ\mathrm{C},\ 1\ \mathrm{bar}$
(C) $273\ ^\circ\mathrm{C},\ 2\ \mathrm{bar}$
(D) $0\ ^\circ\mathrm{C},\ 3\ \mathrm{bar}$

Answer: (D) $0\ ^\circ\mathrm{C},\ 3\ \mathrm{bar}$ · The council's preliminary key

Q169 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

A and B atoms in a crystal are positioned at the corners and face centers respectively. What is the formula of the crystal?

(A) $\mathrm{A_2B_3}$
(B) $\mathrm{AB_2}$
(C) $\mathrm{AB_3}$
(D) $\mathrm{A_2B_3}$

Answer: (C) $\mathrm{AB_3}$ · The council's preliminary key

Q170 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

In a crystal lattice, anions A forms hcp array. 2/3 of the tetrahedral voids are occupied by cations C. What is the formula of crystal?

(A) $\mathrm{C_3A_4}$
(B) $\mathrm{C_4A_3}$
(C) $\mathrm{C_2A_3}$
(D) $\mathrm{C_3A_2}$

Answer: (B) $\mathrm{C_4A_3}$ · The council's preliminary key

Q171 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The ratio of rate of diffusion of $\mathrm{SO_2}$ to $\mathrm{CH_4}$ is

(A) $1:1$
(B) $1:2$
(C) $2:1$
(D) $4:1$

Answer: (B) $1:2$ · The council's preliminary key

Q172 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The ratio of effective number of atoms in a unit cell of fcc and bcc lattices is

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(A) $1:2$
(B) $4:1$
(C) $1:4$
(D) $2:1$

Answer: (D) $2:1$ · The council's preliminary key

Q173 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A cubic lattice has A atoms at the body center, B atoms at the corners, C atoms at half of the face centers. The formula of the lattice is

(A) ABC_2
(B) AB_2C_4
(C) $A_2B_2C_3$
(D) ABC_3

Answer: (C) $A_2B_2C_3$ · The council's preliminary key

Q174 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

20 mL of gas A and 10 mL of gas B diffuses through a porous membrane separately in 1 minute. If the vapor density of B is X, what is the vapor density of A?

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

Answer: (C) $\frac{x}{4}$ · The council's preliminary key

Q175 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

The density of Na is $0.613\ \mathrm{g\ cm^{-3}}$. If the edge length of unit cell of Na is $5\mathrm{A}^0$, the effective number of atoms of Na per unit cell is (Atomic weight of Na = 23 u)

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

Answer: (C) 2 · The council's preliminary key

Q176 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

Ag crystallizes in fcc lattice. What is the total number of tetrahedral voids present in 540 g of Ag metal? (N_A = Avagadro (sic) number; Ag atomic weight = $108\ \mathrm{g\ mol^{-1}}$)

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(A) $10\ N_A$
(B) $20\ N_A$
(C) $40\ N_A$
(D) $60\ N_A$

Answer: (A) $10\ N_A$ · Checked by our team

Q177 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

If two gases CH_4 and SO_2, are allowed to enter from the two ends of a 1 km long vacuum tube at the same time, where will the gases meet from the CH_4 end?

(A) 500 m
(B) 620 m
(C) 667 m
(D) 720 m

Answer: (C) 667 m · The council's preliminary key

Q178 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

Which of the following statement is not correct?

(A) Packing efficiency of hcp and ccp lattices are identical
(B) Packing efficiency of fcc lattice > Packing efficiency of ccp lattice
(C) Packing efficiency of fcc lattice = Packing efficiency of ccp lattice
(D) Packing efficiency of hcp lattice = Packing efficiency of fcc lattice

Answer: (B) Packing efficiency of fcc lattice > Packing efficiency of ccp lattice · The council's preliminary key

Q179 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

F- centers are formed in NaCl crystal if it is heated with Na vapour. The above is due to

(A) Schottky defect
(B) Dislocation defect
(C) Metal excess defect
(D) Metal deficiency defect

Answer: (C) Metal excess defect · The council's preliminary key

Q180 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

The ratio of rates of diffusion of Helium (He) to Hydrogen (H_2)

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(A) $\sqrt{2}:1$
(B) $1:\sqrt{2}$
(C) $1:4$
(D) $1:1.229$

Answer: (B) $1:\sqrt{2}$ · The council's preliminary key

Q181 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A cubic lattice has atoms of A at the body centre, atoms of B at the corners of the cube and atoms C at all the face centres. What is its formula?

(A) ABC_3
(B) ABC_2
(C) AB_2C
(D) A_2BC_3

Answer: (A) ABC_3 · The council's preliminary key

Q182 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Which of the following molecular formula and type of defect are correct for the following statement? "In FeO crystal, some Fe^{2+} ions are missing and the loss of positive charge is made up by the presence of Fe^{3+} ions"

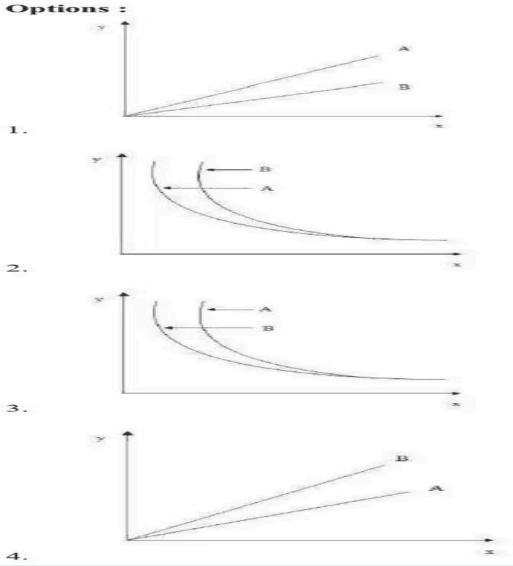
(A) $Fe_{0.95}O$ and metal excess defect
(B) $Fe_{1.05}O$ and metal deficiency defect
(C) $Fe_{0.95}O$ and metal deficiency defect
(D) $Fe_{1.05}O$ and metal excess defect

Answer: (C) $Fe_{0.95}O$ **and metal deficiency defect** · The council's preliminary key

Q183 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

Identify the correct variation of pressure and volume of a real gas (A) and an ideal gas (B) at constant temperature. (y = P; x = V)

Identify the correct variation of pressure and volume of a real gas (A) and an ideal gas (B) at constant temperature.
(y = P; x = V)
స్థిర ఉష్ణోగ్రత వద్ద, ఒక నిజ వాయువు (A) మరియు ఒక ఆదర్శ వాయువు (B) ల పీడనము మరియు మనపరిమాణము మార్పును సూచించు సరియైన దానిని గుర్తించుము.
(y = P; x = V)
Options :



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · The council's preliminary key

Q184 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

An element crystallizing in fcc lattice has a density of 8.92 g cm^{-3} and edge length of 3.61×10^{-8} cm. What is the atomic weight of element? (N= 6.022×10^{23} mol^{-1})

(A) 126.356 u
(B) 63.178 u
(C) 31.589 u
(D) 47.383 u

Answer: (B) 63.178 u · The council's preliminary key

Q185 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

Which of the following statement is correct for fcc lattice?

(A) There are equal no of octahedral and tetrahedral voids in a unit cell.
(B) The tetrahedral voids are present at the edge centers.
(C) Octahedral voids are present at the body center and edge centers.
(D) Its packing efficiency (PE) is higher than hcp lattice PE.

Answer: (C) Octahedral voids are present at the body center and edge centers. · The council's preliminary key

Q186 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

Find the false statement for ideal gases.

(A) Kinetic energy of 1 mol of gas depends on mass of the gas molecule.
(B) Kinetic energy increases with increase in temperature.
(C) Kinetic energy of 1 g of H_2 is higher than that 8 g of O_2 at the same temperature.
(D) At a given temperature, kinetic energy does not depend on the pressure of the gas.

Answer: (A) Kinetic energy of 1 mol of gas depends on mass of the gas molecule. · The council's preliminary key

Q187 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

The anions (A) of C_pA_q molecule forms an fcc lattice. Cations (C) are positioned at the body center and half of the edge centers. The formula of the molecule is

(A) CA
(B) CA_2
(C) C_3A_4
(D) C_5A_8

Answer: (D) C_5A_8 · The council's preliminary key

Q188 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

Elements A and B have fcc and bcc structures respectively with a unit cell edge length of $3A^0$ for both elements. The no of atoms in 210 gm of A is equal to 594 gm of B. If density of A is $7\ g\ cm^{-3}$, what is the density of B?

(A) $9.9\ g\ cm^{-3}$
(B) $4.5\ g\ cm^{-3}$
(C) $6.8\ g\ cm^{-3}$
(D) $11.2\ g\ cm^{-3}$

Answer: (A) $9.9\ g\ cm^{-3}$ · The council's preliminary key

Q189 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

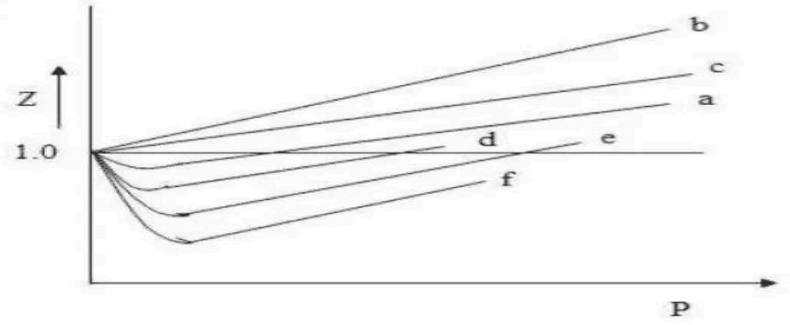
Among the gases a, b, c, d, e and f, the gases that show only positive deviation from ideal behavior at all pressures in the graph are

(see the figure above)

EdLoop EAPCET

Among the gases a, b, c, d, e and f, the gases that show only positive deviation from ideal behavior at all pressures in the graph are

a, b, c, d, e మరియు f అనే వాయువులలో ఏవి గ్రాఫ్ లో ఆదర్శ స్వభావము నుండి ధన విచలనాన్ని మాత్రమే ప్రదర్శిస్తాయి.



Options :

1. b, c only
   b, c మాత్రమే
2. b, c, a only
   b, c, a మాత్రమే
3. d, e only
   d, e మాత్రమే
4. d, e, f only
   d, e, f మాత్రమే

(A) b, c only
(B) b, c, a only
(C) d, e only
(D) d, e, f only

Answer: (B) b, c, a only · Checked by our team

Q190 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

The number of network solids and ionic solids in the list given below is respectively
H_2O (ice), AlN, Cu, CaF_2, diamond, MgO, CCl_4, ZnS, Ag, NaCl, SiO_2

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

Answer: (B) 3, 4 · The council's preliminary key

Q191 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

If molten NaCl contains $SrCl_2$ as impurity, crystallization can generate

(A) Anionic vacancies
(B) Cationic vacancies
(C) Metal excess defects
(D) Metal deficiency defects

Answer: (B) Cationic vacancies · The council's preliminary key

Q192 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

From the following plots, find the correct option.

(see the figure above)

From the following plots, find the correct option.

క్రింది గ్రాఫ్ ల నుండి, సరియైన ఐచ్ఛికాన్ని గుర్తించండి.



Options :

1. $T_1 > T_2$; $P_1 > P_2$
2. $T_1 > T_2$; $P_2 > P_1$
3. $T_2 > T_1$; $P_2 > P_1$
4. $T_2 > T_1$; $P_1 > P_2$

(A) $T_1 > T_2$; $P_1 > P_2$
(B) $T_1 > T_2$; $P_2 > P_1$
(C) $T_2 > T_1$; $P_2 > P_1$
(D) $T_2 > T_1$; $P_1 > P_2$

Answer: (D) $T_2 > T_1$; $P_1 > P_2$ · The council's preliminary key

Q193 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

Match List I with List II

List I (defects): A. Frenkel defects; B. Schottkey defects; C. Vacancy defects; D. Metal deficiency defects

List II (Examples): 1. FeO; 2. NaCl; 3. AgCl; 4. Crystals with vacant lattice sites.

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

Answer: (B) A-3, B-2, C-4, D-1 · The council's preliminary key

Q194 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

Which of the following solids is not a molecular solid?

(A) HCl
(B) H_2O
(C) CCl_4
(D) SiO_2

Answer: (D) SiO_2 · The council's preliminary key

Q195 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Identify the correct relation between Boyle temperature (T_B), Critical temperature (T_c) and Inversion temperature (T_i):

(A) $T_c > T_B > T_i$
(B) $T_c > T_i > T_B$
(C) $T_i > T_B > T_c$
(D) $T_B > T_c > T_i$

Answer: (C) $T_i > T_B > T_c$ · The council's preliminary key

Q196 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

1 mole of each of X_1, X_2, X_3 with Vander wall's constants a (in $\text{atm L}^3\text{mol}^{-2}$) 1.0, 3.8, 2.1 respectively is kept separately in three different vessels of equal volume at identical temperature. Their pressures are observed to be $P_1, P_2, \& P_3$ respectively. On the basis of this data alone, select the correct option (neglect the effect of 'b')

(A) $P_1 < P_2 < P_3$
(B) $P_2 < P_1 < P_3$
(C) $P_2 < P_3 < P_1$
(D) $P_1 = P_2 = P_3$

Answer: (C) $P_2 < P_3 < P_1$ · The council's preliminary key

Q197 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

A gas occupies 4.5 L at 27 °C. If the pressure is kept constant and the temperature is increased to 127 °C, the same gas would occupy _____

(A) $2.25\ L$
(B) $4.5\ L$
(C) $3.0\ L$
(D) $6.0\ L$

Answer: (D) $6.0\ L$ · The council's preliminary key

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Q198 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

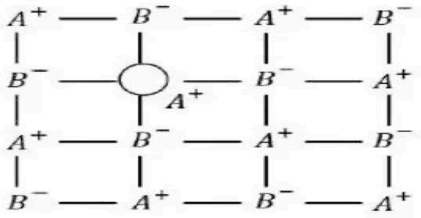
The following structure containing A^+ cations and B^- anions represents _____

(see the figure above)

Mandatory : No

The following structure containing A^+ cations and B^- anions represents _____

కాటయాన్ A^+ మరియు ఆనయాన్ B^- లను కలిగిన పటములో చూపిన నిర్మాణము _____ ను తెలియచేస్తుంది.



Options :

1. Schottky effect
షాట్కీ లోపము

2. Frenkel effect
ఫ్రెంకెల్ లోపము

3. Metal excess defect
అధిక లోహ లోపము

4. Impurity
మలినములు

(A) Schottky effect
(B) Frenkel effect
(C) Metal excess defect
(D) Impurity

Answer: (B) Frenkel effect · The council's preliminary key

Q199 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

At what temperature will the total kinetic energy of 0.30 moles of He be same as the total kinetic energy of 0.40 moles of Ar at 400 K?

(A) 400 K
(B) 300 K
(C) 273 K
(D) 533 K

Answer: (D) 533 K · The council's preliminary key

Q200 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

A gas deviates most from ideal behavior when it is subjected to _____

(A) low temperature & high pressure
(B) high temperature & low pressure
(C) high temperature & high pressure
(D) low temperature & low pressure

Answer: (A) low temperature & high pressure · The council's preliminary key

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Q201 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

In a mixed oxide of 'A' and 'B', 'A' occupies all the octahedral voids while 'B' occupies $(2/3)^{rd}$ the tetrahedral voids. The molecular formula of this oxide is _____

(A) $A_3B_4O_3$
(B) $A_3B_2O_3$
(C) A_3BO_3
(D) AB_2O_3

Answer: (A) $A_3B_4O_3$ · The council's preliminary key

Q202 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

A real gas would be most likely to obey the ideal gas laws at _____

(A) low temperature and low pressure
(B) high temperature and low pressure
(C) high temperature and high pressure
(D) low temperature and high pressure

Answer: (B) high temperature and low pressure · The council's preliminary key

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Q203 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Among the following, identify the gas which has the greatest average speed of its molecules?

(A) $0.5\ mol$ of O_2 at $500\ K$
(B) $0.2\ mol$ of CO_2 at $400\ K$
(C) $1.0\ mol$ of He at $200\ K$
(D) $0.4\ mol$ of NH_3 at $300\ K$

Answer: (C) $1.0\ mol$ **of** He **at** $200\ K$ · The council's preliminary key

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Q204 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

In $Fe_{0.96}O$, Fe is present in +2 and +3 oxidation state, what is the mole-fraction of Fe^{2+} in the compound?

(A) 12/25
(B) 25/12
(C) 1/12
(D) 11/12

Answer: (D) 11/12 · The council's preliminary key

Q205 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Identify the incorrect statement regarding crystals having Frenkel defect:

(A) Frenkel defects are observed where the difference in sizes of cations and anions is large.
(B) The density of crystals having Frenkel defect is less than that of a pure perfect crystal.
(C) An ionic crystal having Frenkel defect may also contain Schottky defect.
(D) Alkali halides don't usually have Frenkel defect.

Answer: (B) The density of crystals having Frenkel defect is less than that of a pure perfect crystal. · The council's preliminary key

Q206 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Among the following, Van der Waals constant 'a' would be maximum for _____

(A) H_2
(B) O_2
(C) CH_4
(D) NH_3

Answer: (D) NH_3 · The council's preliminary key

Q207 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The Kinetic energy of one mole of any gas depends upon _____

(A) pressure of the gas
(B) volume of the gas
(C) nature of the gas
(D) absolute temperature of the gas

Answer: (D) absolute temperature of the gas · The council's preliminary key

Q208 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

How many unit cells are present in a cube shaped ideal crystal of $NaCl$ of mass $1\ g$?

(A) 5.14×10^{21}
(B) 1.28×10^{24}
(C) 1.71×10^{21}
(D) 2.5×10^{21}

Answer: (D) 2.5×10^{21} · The council's preliminary key

Q209 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If two molecules of A and B having mass $100\ Kg$ and $64\ Kg$ and rate of diffusion of A is 12×10^{-3}, then rate of diffusion of B will be _____

(A) 15×10^{-3}
(B) 64×10^{-3}
(C) 36×10^{-3}
(D) 10×10^{-3}

Answer: (A) 15×10^{-3} · The council's preliminary key

Q210 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

A cylinder contains a mixture of $5\ g$ of N_2 and $6\ g$ of Ar gases. If the total pressure of the mixture of the gases in the cylinder is $30\ bar$, then the partial pressure of N_2 gas is _____ (Molecular mass of $N_2 = 28\ g\ mol^{-1}$, Atomic mass of $Ar = 40\ u$)

(A) $16.36\ bar$
(B) $0.545\ bar$
(C) $30\ bar$
(D) $0.180\ bar$

Answer: (A) $16.36\ bar$ · The council's preliminary key

Q211 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

If each edge of a cubic unit cell of an element having atomic mass 120 and density $6.25\ \mathrm{g.cc^{-1}}$ measures $400\ \mathrm{pm}$, then the crystal lattice is _____

(A) Primitive
(B) Body centered
(C) Face centered
(D) End centered

Answer: (B) Body centered · The council's preliminary key

Q212 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

A person living in Shimla observed that cooking food without using pressure cooker takes more time. The reason is that at high altitude _____

(A) Temperature decreases
(B) Pressure increases
(C) Pressure decreases
(D) Temperature increases

Answer: (C) Pressure decreases · The council's preliminary key

Q213 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

Iron exhibits BCC-structure at room temperature. Above $500\ ^\circ\text{C}$, it transforms to FCC-structure. Find the ratio of the density of iron at room temperature to that at $500\ ^\circ\text{C}$. (Assume the atomic radii and the molar mass of iron remain constant even with variation in temperature)

(A) $3\sqrt{3} : 4\sqrt{2}$
(B) $\sqrt{3} : \sqrt{2}$
(C) $\sqrt{2} : \sqrt{3}$
(D) $10 : 92$

Answer: (A) $3\sqrt{3} : 4\sqrt{2}$ · The council's preliminary key

Q214 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Which gas among the following is the easiest to liquify?

(A) SO_2
(B) N_2
(C) NH_3
(D) CO_2

Answer: (A) SO_2 · The council's preliminary key

Q215 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Pressure of 1 g ideal gas X at $300K$ is 2 atm. When 2 g of another gas Y is introduced in the same vessel at same temperature, the pressure become 1 atm. The correct relationship between molar mass of X and Y is _____

(A) $M_Y = 2M_X$
(B) $M_Y = 4M_X$
(C) $M_X = 4M_Y$
(D) $M_X = 5M_Y$

Answer: (B) $M_Y = 4M_X$ · The council's preliminary key

Q216 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

For $NaCl$, the number of Schottky pairs per cm^3 at room temperature are _____

(A) 10^{12}
(B) 10^{23}
(C) 10^{6}
(D) 10^{4}

Answer: (C) 10^{6} · The council's preliminary key

Q217 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

Which among the following statements is/are incorrect regarding real gases?
(i) Their compressibility factor is never equal to unity ($Z \neq 1$).
(ii) The deviations from ideal behavior are less at low pressures and high temperatures.
(iii) Intermolecular forces among gas molecules are equal to zero.
(iv) The obey Van der Waals equation, $PV = nRT$.

(A) (i), (ii), (iv) only
(B) (ii), (iv) only
(C) (ii) only
(D) (iii), (iv) only

Answer: (D) (iii), (iv) only · The council's preliminary key

Q218 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

In the face centered unit cell, the lattice points are present at _____

(A) only the corners of the unit cell
(B) the corners and the center of the unit cell
(C) the corners and the face centres of the unit cell
(D) only the face centres of the unit cell

Answer: (C) the corners and the face centres of the unit cell · The council's preliminary key

Q219 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

When the temperature of a gas is increased from $30\ ^{\circ}\mathrm{C}$ to $930\ ^{\circ}\mathrm{C}$, the root mean square speed of the gas would _____

(A) get doubled
(B) remain constant
(C) gets halved
(D) increase by 5.5 times

Answer: (A) get doubled · The council's preliminary key

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Q220 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Three flasks of equal volumes contain CH_4, CO_2 & Cl_2 gases respectively. They will contain equal number of molecules if _____

(A) The mass of all the gases is same
(B) The mass of all the gases is same but Temperature is different
(C) Temperature & Pressure of all the flasks are same
(D) Temperature, Pressure & Masses same in the flasks

Answer: (C) Temperature & Pressure of all the flasks are same · The council's preliminary key

Q221 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

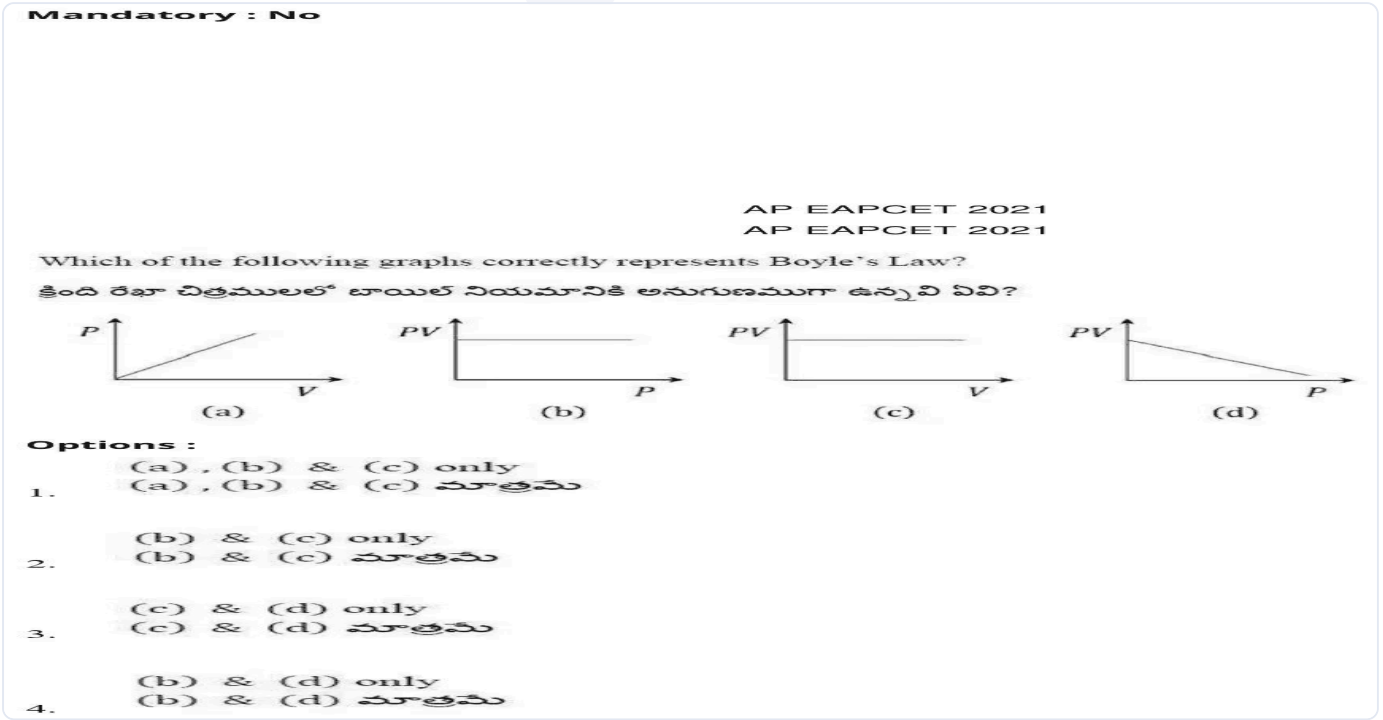
A metal crystallizes with a FCC-lattice, the edge of whose unit cell is $x\ pm$. The diameter of this metal atom would be _____ pm.

(A) $2x$
(B) $\frac{x}{\sqrt{2}}$
(C) $x\sqrt{2}$
(D) $\frac{\sqrt{2}}{x}$

Answer: (B) $\frac{x}{\sqrt{2}}$ · The council's preliminary key

Q222 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

Which of the following graphs correctly represents Boyle's Law?
(see the figure above)



(A) (a), (b) & (c) only
(B) (b) & (c) only
(C) (c) & (d) only
(D) (b) & (d) only

Answer: (B) (b) & (c) only · The council's preliminary key

Q223 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

The density of an ideal gas can be given by _____, where P, V, M, T and R respectively denote pressure, volume, molar-mass, temperature and universal gas constant.

(A) $\frac{PM}{RT}$
(B) $\frac{PV}{RT}$
(C) $\frac{RT}{PM}$
(D) $\frac{RT}{PV}$

Answer: (A) $\frac{PM}{RT}$ · The council's preliminary key

Q224 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Among the following, the maximum deviation from ideal gas behavior is expected from _____

(A) $\mathrm{He}_{(g)}$
(B) $\mathrm{CH}_{4(g)}$
(C) $\mathrm{NH}_{3(g)}$
(D) $\mathrm{H}_{2(g)}$

Answer: (C) $\mathrm{NH}_{3(g)}$ · The council's preliminary key

Q225 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Two flasks A and B have equal volumes. A is maintained at $300\mathrm{K}$ and B at $600\mathrm{K}$. Equal masses of H_2 and CO_2 are taken in flasks A and B respectively. Find the ratio of total K.E of gases in flask A to that of B

(A) $1:2$
(B) $11:1$
(C) $33:2$
(D) $55:7$

Answer: (B) $11:1$ · The council's preliminary key

Q226 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

The FCC-crystal contains how many atoms in each unit cell?

(A) 4
(B) 8
(C) 10
(D) 12

Answer: (A) 4 · The council's preliminary key

Q227 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

A balloon filled with an air sample occupies 3 L volume at 35 °C. On lowering the temperature to T, the volume decreases to 2.5 L. The temperature T is? [Assume P constant]

(A) $16\ ^\circ C$
(B) $-16\ ^\circ C$
(C) $24\ ^\circ C$
(D) $-20\ ^\circ C$

Answer: (B) $-16\ ^\circ C$ · The council's preliminary key

Q228 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

An alloy made up of A and B metals crystallizes in a cubic lattice, where B atoms occupy the corners and A atoms occupy the face centers. The formula of the alloy formed is

(A) AB_3
(B) A_3B
(C) A_2B_3
(D) A_3B_2

Answer: (B) A_3B · The council's preliminary key

Q229 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

Which of the following indicates a plot of compressibility factor (Z) vs P at room temperature for helium

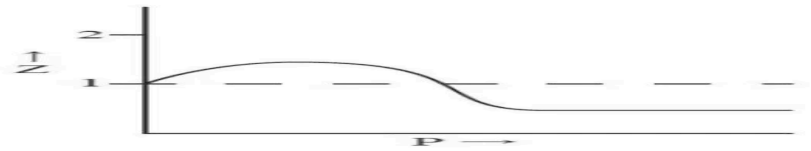
(see the figure above)

EdLoop EAPCET

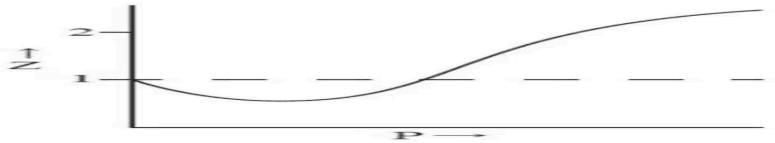
Which of the following indicates a plot of compressibility factor (Z) vs P at room temperature for helium

Options :

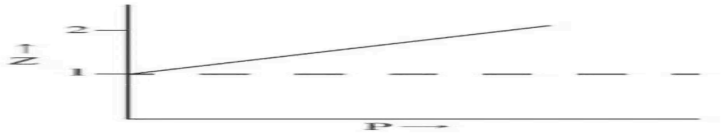
1.



2.



3.



4.



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (C) · The council's preliminary key

Q230 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

At $300\ \mathrm{K}$ the average velocity of a gas is $3 \times 10^2\ \mathrm{cm/sec}$. The average velocity (in cm/sec) of it at $1200\ \mathrm{K}$ is

(A) 6×10^2

(B) 4×10^2

(C) 8×10^2

(D) 1×10^3

Answer: (A) 6×10^2 · The council's preliminary key

Q231 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

Which of the following is correct in the crystal lattice given below?

(A) Nearest neighbour distance in NaCl $= \frac{a}{\sqrt{2}}$

(B) Total volume of a unit cell in CCP $= \left(r\sqrt{2}\right)^3$

(C) Packing fraction of BCC is more than that of a FCC unit cell

(D) Nearest neighbour distance in CsCl $= a\,\frac{\sqrt{3}}{2}$

Answer: (D) Nearest neighbour distance in CsCl $= a\,\frac{\sqrt{3}}{2}$ · The council's preliminary key

Q232 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Which gas has a density of 1.24 g/L at $0\ ^\circ\mathrm{C}$ and 1 atm pressure?

(A) $\mathrm{O_2}$

(B) $\mathrm{CH_4}$

(C) CO

(D) $\mathrm{CO_2}$

Answer: (C) CO · The council's preliminary key

Q233 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

The fraction of the total volume occupied by the atoms in a simple cube is

(A) $\frac{\pi}{2}$

(B) $\frac{\pi}{4}$

(C) $\frac{\pi}{6}$

(D) $\frac{\pi}{8}$

Answer: (C) $\frac{\pi}{6}$ · The council's preliminary key

Q234 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

1 L each of gases A and B diffused through a membrane in 15 and 30 minutes, respectively, under identical conditions. What is the ratio of molecular weight of A and B?

(A) 1 : 2

(B) 2 : 1

(C) 4 : 1

(D) 1 : 4

Answer: (D) 1 : 4 · The council's preliminary key

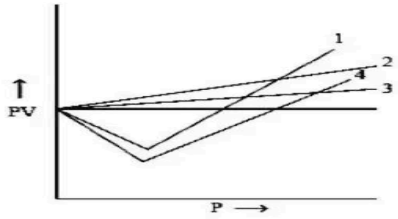
Q235 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The figure represents PV vs P relation for CO, $\mathrm{CH_4}$, $\mathrm{H_2}$ and He gases under identical conditions. Which curve, shown in the figure, represents He gas?

(see the figure above)

EdLoop EAPCET

The figure represents PV vs P relation for CO, CH_4, H_2 and He gases under identical conditions. Which curve, shown in the figure, represents He gas?



Options :

1. 1
2. 2
3. 3
4. 4

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

Answer: (C) 3 · The council's preliminary key

Q236 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

How many times the volume of a diatomic gas should be increased reversibly and adiabatically in order to reduce its RMS velocity to half of its initial value.

(A) 4
(B) 8
(C) 16
(D) 32

Answer: (D) 32 · The council's preliminary key

Q237 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The number of voids in 1 mole of a compounds forming a hcp structure are

(A) 1.8×10^{24}
(B) 3.6×10^{24}
(C) 6.0×10^{23}
(D) 7.2×10^{24}

Answer: (A) 1.8×10^{24} · The council's preliminary key

Q238 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The most probable velocity of a gas at 7200 K is equal to the RMS velocity of He gas at 27 °C. The gas is

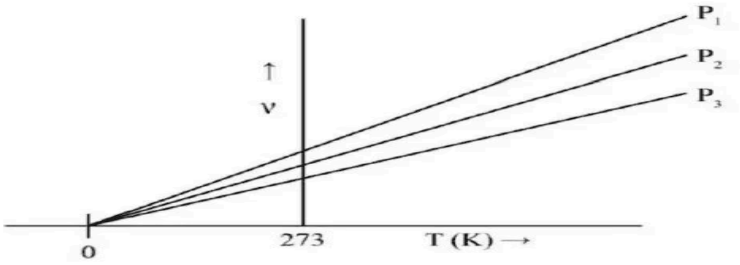
(A) O_2
(B) CO
(C) N_2
(D) SO_2

Answer: (D) SO_2 · The council's preliminary key

Q239 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A plot of volume of the gas Versus T (K) is shown below. Which of the options is correct for the plot? *(see the figure above)*

A plot of volume of the gas Versus T (K) is shown below. Which of the options is correct for the plot?



Options :

1. $P_1 < P_2 < P_3$
2. $P_3 < P_2 < P_1$
3. $P_1 = P_2 \neq P_3$
4. $P_1 = P_2 = P_3 = 0$ at 273 K

(A) $P_1 < P_2 < P_3$
(B) $P_3 < P_2 < P_1$
(C) $P_1 = P_2 \neq P_3$
(D) $P_1 = P_2 = P_3 = 0$ at 273 K

Answer: (A) $P_1 < P_2 < P_3$ · The council's preliminary key

Q240 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A compound made up of elements A and B (with a general formula A_xB_y), where B form a hcp lattice and A occupy $2/3^{rd}$ of the tetrahedral voids. The formula of the compound is

(A) A_2B_3
(B) A_3B_4
(C) A_4B_3
(D) A_3B_2

Answer: (C) A_4B_3 · The council's preliminary key

Q241 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The ratio of rates of diffusion of oxygen and an unknown gas is 1 : 4. The unknown gas is

(A) SO_2
(B) N_2
(C) H_2
(D) D_2

Answer: (C) H_2 · The council's preliminary key

Q242 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

Two gases A and B are released from the two ends of a tunnel of length 100 m. A travels 40 min, before meeting the gas B in the tunnel. If the molecular weight of B is 18, what is the molecular weight of A?

(A) 28.5
(B) 10.5
(C) 8.5
(D) 40.5

Answer: (D) 40.5 · The council's preliminary key

Q243 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

Potassium crystallizes in FCC lattice with unit cell length of 0.5 nm. The approximate density (in $g\,cm^{-3}$), if it contains 0.1 % Schottky defects is

(A) 1.2
(B) 2.1
(C) 1.7
(D) 2.8

Answer: (B) 2.1 · The council's preliminary key

Q244 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Find the gas, if its density at $273\ K$ temperature and $76\ cm$ Hg pressure is $1.94\ g/dm^3$.

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(A) CH_4
(B) C_2H_6
(C) CO_2
(D) Xe

Answer: (C) CO_2 · The council's preliminary key

Q245 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Real gases deviate from ideal behaviour because the molecules _____

(A) Show Brownian movement
(B) Contain covalent bond
(C) Are colorless
(D) Attract each other

Answer: (D) Attract each other · The council's preliminary key

Q246 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

For any pure liquid at pressure of 1.013 bar, the temperature at which the liquid and vapor are at equilibrium is called _____

(A) Melting point
(B) Boiling point
(C) Freezing point
(D) Triple point

Answer: (B) Boiling point · The council's preliminary key

Q247 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Helium diffuses four times faster than which of the following?

(A) ClO_2
(B) SO_2
(C) CO_2
(D) NO_2

Answer: (B) SO_2 · The council's preliminary key

Q248 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The correct statement among the following, regarding defects in solids is
1) Frenkel defect is favored by small difference in the sizes of cation and anion
2) Frenkel defect is a metal excess defect
3) Trapping of electron in the lattice leads to formation of F-CENTRE
4) Schottky defect has no effect on the physical property of solids

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

Answer: (C) 3 · The council's preliminary key

Q249 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The pressure exerted by a mixture of 3.2 g of methane and 4.4 g of CO_2 contained in a 9 dm^3 flask at 27 °C is _____

(A) 1.62 atm
(B) 8.00 atm
(C) 0.82 atm
(D) 3.10 atm

Answer: (C) 0.82 atm · The council's preliminary key

Q250 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

10 g of a gas at STP occupies a volume of 2 L. At what temperature will the volume be doubled, if pressure & amount of gas remain constant

(A) 273 K
(B) 546 K
(C) -273 K
(D) 546 °C

Answer: (B) 546 K · The council's preliminary key

Q251 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

Predict the correct order of rate of diffusion of the following molecules.

(A) $SO_2 > SO_3 > PCl_3 > CO_2$
(B) $PCl_3 > SO_3 > SO_2 > CO_2$
(C) $CO_2 > SO_2 > SO_3 > PCl_3$
(D) $CO_2 > SO_2 > PCl_3 > SO_3$

Answer: (C) $CO_2 > SO_2 > SO_3 > PCl_3$ · The council's preliminary key

Q252 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

The fraction of voids occupied in inverse spinel compounds are _____

(A) $1/8^{th}$ of tetrahedral voids and $1/2$ of octahedral voids
(B) $1/2$ of tetrahedral voids and $1/8^{th}$ of octahedral voids
(C) $1/4^{th}$ of tetrahedral voids and $1/8^{th}$ of octahedral voids
(D) $1/8^{th}$ of tetrahedral voids and $1/4^{th}$ of octahedral voids

Answer: (A) $1/8^{th}$ of tetrahedral voids and $1/2$ of octahedral voids · The council's preliminary key

Q253 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

The rms velocity of Oxygen molecules at $27\ ^{\circ}\mathrm{C}$ is around $800\ \mathrm{m/s}$. The rms velocity of methane molecule at $600\ \mathrm{K}$ temperature is around _____

(A) $400\ \mathrm{m/s}$
(B) $1600\ \mathrm{m/s}$
(C) $800\ \mathrm{m/s}$
(D) $1200\ \mathrm{m/s}$

Answer: (B) $1600\ \mathrm{m/s}$ · The council's preliminary key

Q254 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Which among the following is a physical property of molecular solids?

(A) Volatile
(B) Quite hard
(C) Brittle
(D) Good conductor of electricity

Answer: (A) Volatile · The council's preliminary key

Q255 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Gaseous state is characterized by which of the following physical properties?
I) Gases mix evenly and completely on all proportions without any mechanical aid
II) Gases exert pressure on all directions evenly
III) Gases are highly compressible and have lower density than liquids and solids
IV) The volume and shape of the gas is fixed

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

Answer: (C) I, II, III · The council's preliminary key

Q256 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

Analysis shows that nickel oxide has the formula $\mathrm{Ni_{0.98}O_{1.00}}$. The fractions of $\mathrm{Ni^{2+}}$ and $\mathrm{Ni^{3+}}$ ions in the crystal are _____

(A) $\mathrm{Ni^{2+}} = 98\ \%$ & $\mathrm{Ni^{3+}} = 2\ \%$
(B) $\mathrm{Ni^{2+}} = 2\ \%$ & $\mathrm{Ni^{3+}} = 98\ \%$
(C) $\mathrm{Ni^{2+}} = 4\ \%$ & $\mathrm{Ni^{3+}} = 96\ \%$
(D) $\mathrm{Ni^{2+}} = 96\ \%$ & $\mathrm{Ni^{3+}} = 4\ \%$

Answer: (D) $\mathrm{Ni^{2+}} = 96\ \%$ & $\mathrm{Ni^{3+}} = 4\ \%$ · The council's preliminary key

Q257 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Which of the following statements is incorrect?

(A) $NaCl$ being an ionic compound is a good conductor of electricity in the solid state
(B) In canonical structures there is no difference in the arrangement of atoms
(C) Hybrid orbitals form stronger bonds than pure orbitals.
(D) VSEPR Theory can explain the square planar geometry of XeF_4.

Answer: (A) $NaCl$ **being an ionic compound is a good conductor of electricity in the solid state** · The council's preliminary key

Q258 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Which of the following laws gives the relation between volume and temperature?

(A) Boyle's law
(B) Charles's law
(C) Gay Lussac's law
(D) Avogadro's law

Answer: (B) Charles's law · The council's preliminary key

Q259 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

In order to increase the volume of a gas by 10 % at constant temperature the pressure of the gas should be _____

(A) Increased by 10 %
(B) Increased by 1%
(C) Decreased by 1 %
(D) Decreased by 10 %

Answer: (D) Decreased by 10 % · The council's preliminary key

Q260 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

When $CaCl_2$ is added to $AgCl$ crystal, the defect introduced is

(A) Frenkel defect only
(B) Schottky defect only
(C) No change
(D) Both Frenkel and Schottky defects

Answer: (B) Schottky defect only · The council's preliminary key

Q261 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

A metallic solid undergoes Frenkel defect. Its original mass, volume and density are M_0, V_0, and D_0 respectively. After Frenkel defect the mass, volume, and density are M, V and D respectively. The variations of M, V and D after Frenkel defect are

(A) $M = M_0,\ V = V_0,\ D = D_0$
(B) $M < M_0,\ V < V_0,\ D < D_0$
(C) $M > M_0,\ V = V_0,\ D > D_0$
(D) $M = M_0,\ V < V_0,\ D > D_0$

Answer: (A) $M = M_0,\ V = V_0,\ D = D_0$ · The council's preliminary key

Q262 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Which among the following materials is extensively used as a piezo electric material?

(A) Quartz
(B) Mica
(C) Amorphous silica
(D) Tridymite

Answer: (A) Quartz · The council's preliminary key

Q263 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Calculate the ratio of the effusion of CO and N_2, when temperature and pressure gradients are held constant?

(A) $1:2$
(B) $1:1$
(C) $2:1$
(D) $1:4$

Answer: (B) $1:1$ · The council's preliminary key

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Q264 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The volume of a given mass of a gas is directly proportional to its Kelvin temperature at constant pressure. The above statement is known as _____

(A) Boyle-law
(B) Vant Hoff's law
(C) Charles's Law
(D) Daltons law of partial pressures

Answer: (C) Charles's Law · The council's preliminary key

Q265 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

What is the temperature of 4 moles of a gas occupying 5 L volume at 3.32 bar? ($R = 0.083\ \text{bar.L.K}^{-1}.\text{mol}^{-1}$)

(A) 5 K
(B) 50 K
(C) 500 K
(D) 0.5 K

Answer: (B) 50 K · The council's preliminary key

Q266 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Calculate the coordination number of Na^+ in $NaCl$ crystal, given radius of Na^+ and Cl^- are 95 pm and 181 pm respectively.

(A) 8
(B) 4
(C) 6
(D) 12

Answer: (C) 6 · The council's preliminary key

Q267 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Assertion: Standard boiling point of a liquid is slightly higher than the normal boiling point
Reason: 1 bar pressure is slightly less than 1 atm pressure

(A) Assertion and reasoning are correct statements and reason is the correct explanation for assertion
(B) Assertion and reasoning are correct statements and reason is not the explanation for assertion
(C) Assertion is correct, reason is wrong
(D) Assertion is wrong, reason is correct

Answer: (D) Assertion is wrong, reason is correct · The council's preliminary key

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Q268 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Which transition metal oxide among the following has electrical conductivity similar to that of copper?

(A) MnO
(B) FeO
(C) ReO_3
(D) TiO_2

Answer: (C) ReO_3 · The council's preliminary key

Q269 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

The temperature at which 4 moles of a gas occupy 5 dm^3 volume at 3.32 bar pressure is

(A) 50 K
(B) 50 °C
(C) 27 °C
(D) 100 K

Answer: (A) 50 K · The council's preliminary key

Q270 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Which of the following statements is incorrect?
A) The property of liquid drops to have minimum surface area is called surface tension
B) Surface tension of liquids decreases with rise in temperature
C) The SI unit of surface tension in $N.m^{-1}$
D) Magnitude of surface tension is less when there is strong attractive force between the molecules

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

Answer: (D) D · The council's preliminary key

Q271 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Match the following graphs of a gas with their corresponding y and x coordinates
Graph (i): *(see the figure above)* (a) pV vs. V
Graph (ii): *(see the figure above)* (b) p vs. V
Graph (iii): *(see the figure above)* (c) p vs. $\frac{1}{V}$

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Orientation : Vertical

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Match the following graphs of a gas with their corresponding y and x coordinates

క్రింది ఇవ్వబడిన వాయువు యొక్క రేఖా చిత్రాలను వాటి సరియైన y, x నిరూపకాలకు జతపరచండి?

Graph / రేఖా చిత్రము	y vs. x
(i) 	(a) pV vs. V
(ii) 	(b) p vs. V
(iii) 	(c) p vs. $\frac{1}{V}$

Options :

1. (i — b), (ii — c), (iii — a)
2. (i — a), (ii — c), (iii — b)
3. (i — b), (ii — a), (iii — c)
4. (i — a), (ii — b), (iii — c)

(A) (i - b), (ii - c), (iii - a)

(B) (i - a), (ii - c), (iii - b)

(C) (i - b), (ii - a), (iii - c)

(D) (i - a), (ii - b), (iii - c)

Answer: (A) (i - b), (ii - c), (iii - a) · The council's preliminary key

Q272 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

Which of the following relations is true based on the partial pressure and mole fraction? (p_{Total} is the total pressure)

(A) $p_i = x_i \times T$

(B) $p_i = x_i \times p_{Total}$

(C) $\frac{p_i}{x_i} = V$

(D) $p_i x_i = p_{Total}$

Answer: (B) $p_i = x_i \times p_{Total}$ · The council's preliminary key

Q273 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

A gaseous mixture of 3 gases A, B & C has a pressure 10 atm. The total number of moles are 10. If partial pressures of gases A & B are 3 atm & 1 atm respectively and if molar mass of gas C is 2, calculate the weight of C in the mixture.

(A) 12 g
(B) 24 g
(C) 8 g
(D) 2 g

Answer: (A) 12 g · The council's preliminary key

Q274 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Which among the following statements is correct?
A) There is a complete order of molecules in gases
B) There is a complete disorder of molecules in gases
C) Molecules are not always in random motion in gases
D) Molecules are fixed at respective position in gases

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

Answer: (B) B · The council's preliminary key

Q275 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Isochores are drawn at _____

(A) Constant volume, Pressure vs Temperature
(B) Constant pressure, Volume vs Temperature
(C) Constant temperature, Pressure vs Volume
(D) Constant temperature, Volume vs Temperature

Answer: (A) Constant volume, Pressure vs Temperature · The council's preliminary key

Q276 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The defect produced due to the presence of extra cations at interstitial sites is called _____

(A) Metal excess defect
(B) Schottky defect
(C) Metal deficiency defect
(D) Frenkel defect

Answer: (A) Metal excess defect · The council's preliminary key

Q277 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The density of oxygen gas at 5 atm and 127 °C will be

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(A) 2.80 g/L
(B) 4.88 g/L
(C) 1.49 g/L
(D) 5.60 g/L

Answer: (B) 4.88 g/L · The council's preliminary key

Q278 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The volume of a given amount of gas at 27 °C at constant pressure is 420 cm^3. If the temperature is reduced by 20 °C at constant pressure, what will be the volume of the gas?

(A) 350 cm^3
(B) 392 cm^3
(C) 450 cm^3
(D) 480 cm^3

Answer: (B) 392 cm^3 · Official TGCHE final key

Q279 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

The compressibility factor $Z = \frac{PV}{nRT}$ for hydrogen gas at 273 K and 1 atm pressure is

(A) zero
(B) one
(C) greater than one
(D) between zero and one

Answer: (C) greater than one · Official TGCHE final key

Q280 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A cubic structure is formed where atoms of element X are occupied at corner of cube and also at face centers. Atoms of element Y are present at body center and at the edge centers. If all the atoms are removed along a plane passing through the middle of the cube (bisecting the four edges), the formula will become

(A) XY_2
(B) $\mathrm{X}_4\mathrm{Y}_3$
(C) XY
(D) $\mathrm{X}_2\mathrm{Y}_3$

Answer: (C) XY · Official TGCHE final key

Q281 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

What is the ratio of kinetic energy of 7 grams of nitrogen and 4 grams of oxygen at T(K)?

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

Answer: (B) 2 : 1 · Official TGCHE final key

Q282 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Equal amount of gases are kept in two separate containers. If densities of the two gases are in 1:2 ratio and their temperatures are in 2:1 ratio, calculate the ratio of their respective pressures.

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

Answer: (A) 1:1 · Official TGCHE final key

Q283 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

At atmospheric pressure and very low temperature, water crystallizes to

(A) Hexagonal form
(B) Cubic form
(C) Tetragonal form
(D) Tetrahedral form

Answer: (B) Cubic form · Official TGCHE final key

Q284 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Intercepts of a plane in crystal is given by a, b/2, 3c in a simple cubic unit cell. The miller indices are

(A) (1 3 2)
(B) (2 6 1)
(C) (1 2 3)
(D) (3 6 1)

Answer: (D) (3 6 1) · Official TGCHE final key

Q285 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

Which among the following graphs, correctly represents the Boyle's Law?

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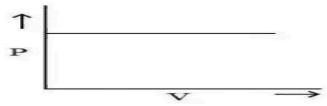
Question Number : 127 Question Id : 7196509227 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which among the following graphs, correctly represents the Boyle's Law?

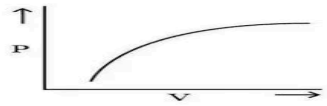
క్రింది గ్రాఫ్ లలో ఏది బాయిల్ నియమమును సరిగా సూచిస్తుంది.

Options :

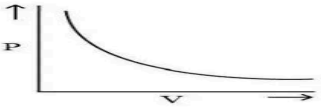
1.



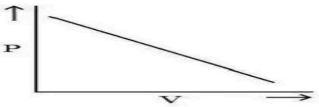
2.



3.



4.



(A) *see figure*

(B) *see figure*

(C) *see figure*

(D) *see figure*

Answer: (C) · Official TGCHE final key

Q286 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

A vessel of volume 24.6 L contains 1.5 moles of H_2 and 2.5 moles of N_2 at 300 K. Calculate the partial pressure of N_2 in the vessel.

(A) 1.5 atm

(B) 2.0 atm

(C) 2.5 atm

(D) 3.0 atm

Answer: (C) 2.5 atm · Official TGCHE final key

Q287 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The angle between (100) and (110) planes of FCC lattice is

(A) 90°

(B) 0°

(C) 45°

(D) 120°

Answer: (C) 45° · Official TGCHE final key

Q288 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Equal amounts of two gases of molecular weights 4 and 40 are mixed. The pressure of the mixture is 1.1 atm. What will be the partial pressure of the lighter gas in the mixture?

(A) 0.25 atm
(B) 0.5 atm
(C) 0.8 atm
(D) 1 atm

Answer: (D) 1 atm · Official TGCHE final key

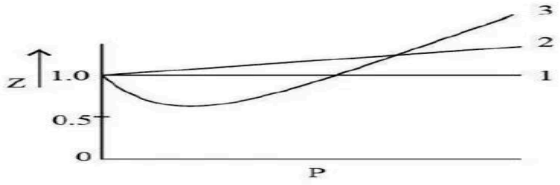
Q289 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Which of the curves (Z vs P) will be followed by a real gas?
(see the figure above)

Question Number : 128 Question Id : 7196501088 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the curves (Z *vs* P) will be followed by a real gas?

క్రింది ఇవ్వబడిన (Z *vs* P) వక్రాలలో దేనిని నిజవాయువులు ప్రదర్శిస్తాయి.



Options :

1. Pathway 3 only
3 వ పథమార్గం మాత్రమే

2. Pathways 2 and 3 only
2 మరియు 3 వ పథమార్గంలు మాత్రమే

3. Pathways 1 and 2 only
1 మరియు 2 పథమార్గంలు మాత్రమే

4. Pathway 2 only
2 వ పథమార్గం మాత్రమే

(A) Pathway 3 only
(B) Pathways 2 and 3 only
(C) Pathways 1 and 2 only
(D) Pathway 2 only

Answer: (B) Pathways 2 and 3 only · Official TGCHE final key

Q290 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

A compound can crystallize in two forms α and β which are FCC and BCC, respectively. The α–form has side length of 2 pm and the β–form has side length of 4 pm. The ratio of their density $\frac{\rho_\alpha}{\rho_\beta}$ is

(A) 32
(B) 16
(C) 8
(D) 4

Answer: (B) 16 · Official TGCHE final key

Q291 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Root mean square (rms) speed of O_2 is 500 m/s at a constant temperature. Calculate the rms speed and the average kinetic energy of H_2 at the same temperature. (consider R = 8.33 $\mathrm{J\,k^{-1}mol^{-1}}$)

(A) 500 m/s and 4.0 kJ/mol
(B) 2000 m/s and 4.0 kJ/mol
(C) 500 m/s and 4.7 kJ/mol
(D) 2000 m/s and 4.7 kJ/mol

Answer: (B) 2000 m/s and 4.0 kJ/mol · Official TGCHE final key

Q292 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Which of the following describes an ideal gas?
(i) The volume occupied by a gas molecule is negligible.
(ii) The collision between ideal gases are elastic
(iii) Particles are very small compared to the distance between each other

(A) (i) and (ii) only
(B) (i) and (iii) only
(C) (ii) and (iii) only
(D) (i), (ii) and (iii)

Answer: (D) (i), (ii) and (iii) · Official TGCHE final key

Q293 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

Copper crystallizes in ccp arrangement and accepted value of metal ion radius was found to be 1.41 Å. Calculate the density of copper in grams per cubic centimetre. (atomic weight of copper is 64, $N_A = 6 \times 10^{23}$)

(A) 6.67
(B) 7.80
(C) 8.90
(D) 10.00

Answer: (A) 6.67 · Official TGCHE final key

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Q294 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Identify the correct observation with respect to the given graphs
(see the figure above)

Question Number : 127 Question Id : 7196506607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Identify the correct observation with respect to the given graphs

ఇవ్వబడిన గ్రాఫ్‌ల పరంగా, ఖచ్చితమైన పరిశీలనను గుర్తించుము.



Options :

1. $T_1 > T_2$ and $P_1 > P_2$
   $T_1 > T_2$ మరియు $P_1 > P_2$
2. $T_2 > T_1$ and $P_1 > P_2$
   $T_2 > T_1$ మరియు $P_1 > P_2$
3. $T_1 > T_2$ and $P_2 > P_1$
   $T_1 > T_2$ మరియు $P_2 > P_1$
4. $T_2 > T_1$ and $P_2 > P_1$
   $T_2 > T_1$ మరియు $P_2 > P_1$

(A) $T_1 > T_2$ and $P_1 > P_2$
(B) $T_2 > T_1$ and $P_1 > P_2$
(C) $T_1 > T_2$ and $P_2 > P_1$
(D) $T_2 > T_1$ and $P_2 > P_1$

Answer: (B) $T_2 > T_1$ and $P_1 > P_2$ · Official TGCHE final key

Q295 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A gas is present at a pressure of 2 atm. What should be the increase in pressure so that the volume of the gas can be decreased to $\frac{1}{4}^{\text{th}}$ of the initial volume at constant temperature?

(A) 0.5 atm
(B) 2 atm
(C) 4 atm
(D) 8 atm

Answer: (D) 8 atm · Official TGCHE final key

Q296 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Identify the law for which the following statement is true.
"Equal volume of all gases at same temperature and pressure should contain equal number of molecules".

(A) Gay Lussac's Law
(B) Avogadro's Law
(C) Law of multiple proportion
(D) Law of Conservation of mass

Answer: (B) Avogadro's Law · Official TGCHE final key

Q297 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

In a BCC lattice having the edge length of 200 pm, the cation has the radius of 70 pm. The radius ratio of $\frac{r_+}{r_-}$ is
(Given $\sqrt{2}$ =1.4, $\sqrt{3}$ =1.7 and $\sqrt{6}$ =2.4)

(A) 0.7
(B) 1
(C) 0.4
(D) 0.2

Answer: (A) 0.7 · Official TGCHE final key

Q298 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

One mole of an ideal gas occupies 12 L at 297 °C. What is the pressure of the gas?

(A) $207\ \mathrm{kPa}$
(B) $395\ \mathrm{kPa}$
(C) $395\ \mathrm{Pa}$
(D) $207\ \mathrm{Pa}$

Answer: (B) $395\ \mathrm{kPa}$ · Official TGCHE final key

Q299 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

4.4 grams of a gas at 0 °C and 0.82 atm pressure occupies a volume of 2.73 L. The gas can be

(A) O_2
(B) CO
(C) NO_2
(D) CO_2

Answer: (D) CO_2 · Official TGCHE final key

Q300 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The rates of diffusion of SO_2, CO_2, PCl_3 and SO_3 are in the following order

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(A) $CO_2 > SO_2 > PCl_3 > SO_3$
(B) $PCl_3 > SO_3 > SO_2 > CO_2$
(C) $SO_2 > SO_3 > PCl_3 > CO_2$
(D) $CO_2 > SO_2 > SO_3 > PCl_3$

Answer: (D) $CO_2 > SO_2 > SO_3 > PCl_3$ · Official TGCHE final key

Q301 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The mass percentage composition of dry air at the sea level is approximately N_2 :63 %, O_2 : 16 %, Kr : 21 %. If the total pressure is P atm, calculate the partial pressure of each component respectively are (Molecular weights N_2 : 28, O_2 : 32, Kr : 84)

(A) 2.25 P atm, 0.5 P atm and 0.25 P atm
(B) 0.75 P atm, 0.17 P atm and 0.08 P atm
(C) 0.63 P atm, 0.16 P atm and 0.21 P atm
(D) 0.5 P atm, 0.3 P atm and 0.2 P atm

Answer: (B) 0.75 P atm, 0.17 P atm and 0.08 P atm · Official TGCHE final key

Q302 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

If the distance between Na^+ and Cl^- ions in sodium chloride crystal is 'Y' pm. The length of the edge of the unit cell will be

(A) 4Y pm
(B) 2Y pm
(C) $\frac{Y}{4}$ pm
(D) $\frac{Y}{2}$ pm

Answer: (B) 2Y pm · Official TGCHE final key

Q303 TS EAMCET 2019 · 6 May · Shift 1 MCQ

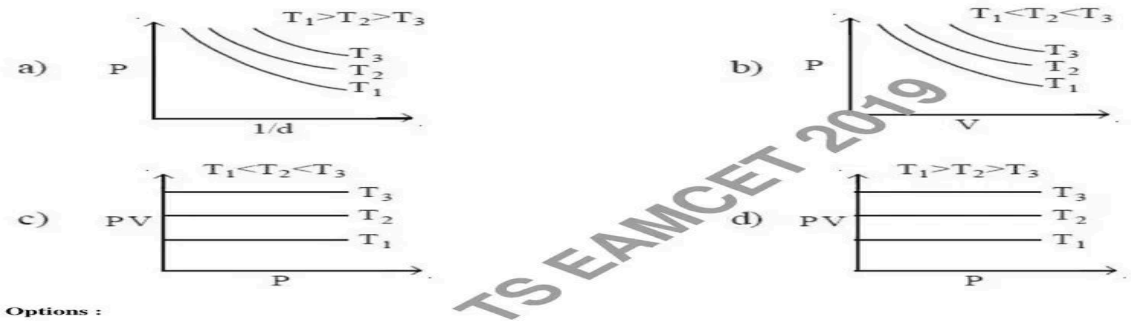
Which of the following is/are correct for Boyle's law?
a) *(see the figure above)*
b) *(see the figure above)*
c) *(see the figure above)*
d) *(see the figure above)*

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Question Number : 127 Question Id : 7512365087 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is/are correct for Boyle's law?

బాయిల్ నియమానికి క్రింది వాటిలో ఏది/ఏవి సరియైనది/సరియైనవి?



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Options :

1. d
2. b, d
3. a, d
4. b, c

(A) d
(B) b, d
(C) a, d
(D) b, c

Answer: (D) b, c · Official TGCHE final key

Q304 TS EAMCET 2019 · 6 May · Shift 1 MCQ

The compressibility factor (Z) of a gas at critical state is $\left(T_c=\frac{8a}{27Rb};\ P_c=\frac{a}{27b^2};\ V_c=3b\right)$

(A) $\frac{8}{3}$
(B) 1
(C) $\frac{3}{8}$
(D) 0.5

Answer: (C) $\frac{3}{8}$ · Official TGCHE final key

Q305 TS EAMCET 2019 · 6 May · Shift 1 MCQ

If an element having atomic number 96 crystallises in cubic lattice with a density of 10.3 g cm^{-3} and the edge length of 314 pm then the structure of solid is

(A) HCP
(B) FCC
(C) BCC
(D) Simple cubic

Answer: (C) BCC · Checked by our team

Q306 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The nitrogen gas pressure inside a container of volume $2.6\ \text{cm}^3$ is 2.3 atm at 27°C. The approximate number of moles of nitrogen present in the container is:
$[R = 0.0821\ \text{L atm mol}^{-1}\ \text{K}^{-1}]$

(A) 4×10^{-3}
(B) 1.7×10^{-4}
(C) 4×10^{-4}
(D) 2×10^{-4}

Answer: (D) 2×10^{-4} · Official TGCHE final key

Q307 TS EAMCET 2019 · 4 May · Shift 1 MCQ

Which of the following statements is NOT correct regarding kinetic theory of gases?

(A) Gases are considered as point masses
(B) Kinetic energy of gas molecules increases with temperature
(C) Total energy of molecules before and after the collisions is different
(D) The distribution of molecular speed of a gas remains constant at a particular temperature

Answer: (C) Total energy of molecules before and after the collisions is different · Official TGCHE final key

Q308 TS EAMCET 2019 · 4 May · Shift 1 MCQ

Match the following.
List - I
A) ABCABC...layers
B) Thermodynamic Defects
C) Farbenzenter
D) Debye-Scherrer Method
List - II
I) F-centres
II) X-ray diffraction
III) Vacancy defects
IV) Semi conductors
V) Silver
The correct answer is

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

Answer: (A) A-V, B-III, C-I, D-II · Official TGCHE final key

Q309 TS EAMCET 2019 · 4 May · Shift 2 MCQ

The van der Waals equation for 0.5 mol of a gas is

(A) $\left(P+\frac{a}{4V^2}\right)\left(\frac{V-b}{2}\right)=RT$
(B) $\left(P+\frac{a}{4V^2}\right)(2V-b)=RT$
(C) $\left(P+\frac{a}{4V^2}\right)(2V-4b)=RT$
(D) $\left(P+\frac{a}{4V^2}\right)=\frac{2RT}{2(V-b)}$

Answer: (B) $\left(P+\frac{a}{4V^2}\right)(2V-b)=RT$ · Official TGCHE final key

Q310 TS EAMCET 2019 · 4 May · Shift 2 MCQ

Which one of the following represents Boyle temperature of a gas?

(A) The temperature at which an ideal gas obeys Boyle's law.
(B) The temperature at which the compressibility factor is less than 1 for a real gas.
(C) The temperature at which a real gas obeys ideal gas law over an appreciable range of pressure.
(D) The temperature at which the compressibility factor deviates from 1 for an ideal gas.

Answer: (C) The temperature at which a real gas obeys ideal gas law over an appreciable range of pressure. · Official TGCHE final key

Q311 TS EAMCET 2019 · 4 May · Shift 2 MCQ

In a compound AB, A atoms occupy the corners of the cube and the B atoms occupy the body centre of the cube. If the A atoms possess magnetic moment due to up-spin and B atoms possess magnetic moment due to down spin, the magnetic nature of the compound AB in an isolated unit cell is

(A) Paramagnetic
(B) Ferrimagnetic
(C) Diamagnetic
(D) Anti-ferromagnetic

Answer: (D) Anti-ferromagnetic · Official TGCHE final key

Q312 TS EAMCET 2019 · 3 May · Shift 1 MCQ

What is the approximate most probable velocity of oxygen? If the kinetic energy of one mole of oxygen is 3741.3 J.

(A) $\sqrt{43851\ \mathrm{J\,kg^{-1}}}$
(B) $\sqrt{48321\ \mathrm{J\,kg^{-1}}}$
(C) $\sqrt{155887\ \mathrm{J\,kg^{-1}}}$
(D) $\sqrt{3950\ \mathrm{J\,kg^{-1}}}$

Answer: (C) $\sqrt{155887\ \mathrm{J\,kg^{-1}}}$ · Official TGCHE final key

Q313 TS EAMCET 2019 · 3 May · Shift 1 MCQ

What is the correction term in the pressure for real gas in comparison to the ideal gas?

(A) $\frac{n^2}{V^2}$
(B) $\frac{aV^2}{n^2}$
(C) $\frac{an^2}{V^2}$
(D) $\frac{an^2}{V} - nb$

Answer: (C) $\frac{an^2}{V^2}$ · Official TGCHE final key

Q314 TS EAMCET 2019 · 3 May · Shift 1 MCQ

How many of the following compounds show ferrimagnetism?
$\mathrm{Fe_3O_4}$; $\mathrm{MgFe_2O_4}$; $\mathrm{NiFe_2O_4}$; MnO; $\mathrm{CrO_2}$

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

Answer: (C) 3 · Official TGCHE final key

Q315 TS EAMCET 2019 · 3 May · Shift 2 MCQ

Diffusion of $\mathrm{CH_4(g)}$ and $\mathrm{O_2(g)}$ occurs under similar conditions, then the ratio of their rates of diffusion is

(A) 1.414
(B) 0.707
(C) 2.312
(D) 1.732

Answer: (A) 1.414 · Official TGCHE final key

Q316 TS EAMCET 2019 · 3 May · Shift 2 MCQ

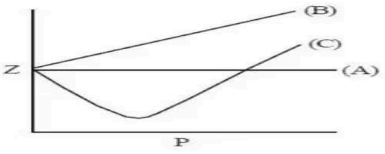
The variation of compressibility factor (Z) with pressure (P in bar) for some gases are shown in the figure below. Identify the gases (A), (B) and (C) respectively
(see the figure above)

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Question Number : 128 Question Id : 7512364448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The variation of compressibility factor (Z) with pressure (P in bar) for some gases are shown in the figure below. Identify the gases (A), (B) and (C) respectively

కొన్ని వాయువుల సంపీడ్య గుణకాల (Z) మార్పులు పీడనం (P bar లలో) పరంగా క్రింద పటములో చూపబడ్డాయి. (A), (B) మరియు (C) వాయువులను వరుసగా గుర్తించుము.
(Real Gas = నిజ వాయువు ; Ideal Gas = ఆదర్శ వాయువు)



Options :

1. Real Gas, N_2, CO_2
2. Ideal Gas, H_2, CO_2
3. Ideal Gas, CO_2, H_2
4. Real Gas, H_2, CO_2

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(A) Real Gas, N_2, CO_2
(B) Ideal Gas, H_2, CO_2
(C) Ideal Gas, CO_2, H_2
(D) Real Gas, H_2, CO_2

Answer: (B) Ideal Gas, H_2, CO_2 · Official TGCHE final key

Q317 TS EAMCET 2019 · 3 May · Shift 2 MCQ

What are two types of crystal structures shown by ice at different pressures?

(A) Hexagonal and monoclinic
(B) Cubic and monoclinic
(C) Hexagonal and tetragonal
(D) Cubic and hexagonal

Answer: (D) Cubic and hexagonal · Official TGCHE final key

Q318 TS EAMCET 2019 · 3 May · Shift 2 MCQ

NaCl is a FCC lattice where Na^+ ions are at corner and face centre positions. Chloride ions are at edge centres and body centre positions. How many NaCl formula units will be in an unit cell

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

Answer: (B) 4 · Official TGCHE final key

Q319 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The ratio of rates of diffusion of gases A and B is 1 : 0.707. If the molecular weight of B is 32, the molecular weight of A is

(A) 2
(B) 64
(C) 16
(D) 8

Answer: (C) 16 · Official APSCHE final key

Q320 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

Which of the following statements are **not** correct?
(A) Diode is a combination of n-type and p-type semiconductors
(B) Silicon or germanium is electron rich impurity
(C) Phosphorous and arsenic are electron deficient impurities
(D) Schottky defect decreases the density of the crystal

(A) B, C
(B) A, D
(C) C, D
(D) A, C

Answer: (A) B, C · Official APSCHE final key

Q321 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If the most probable speed of CO_2 at $27^\circ C$ is $400\ m\ s^{-1}$, the root mean square velocity of CO_2 at the same temperature in $m\ s^{-1}$ is approximately

(A) 600
(B) 490
(C) 267
(D) 245

Answer: (B) 490 · Official APSCHE final key

Q322 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If 0.5 mol of a metal forms hexagonal close packed structure, the total number of voids, and tetrahedral voids respectively in mol are

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(A) 1.5, 1.0
(B) 1.0, 0.5
(C) 1.0, 1.5
(D) 0.5, 1.0

Answer: (A) 1.5, 1.0 · Official APSCHE final key

Q323 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

At T(K), a hypothetical gas consisting of 100 molecules has the following distribution of velocities. (N = Number of molecules; V = velocity in $\mathrm{cm\ s^{-1}}$).

N	V
2	4×10^3
2	4×10^8
10	3×10^4
20	5.5×10^5
25	4×10^5
35	6.8×10^6
6	2×10^7

The most probable velocity (in $\mathrm{cm\ s^{-1}}$) for this gas is

(A) 4×10^3
(B) 4×10^8
(C) 6.8×10^6
(D) 2×10^7

Answer: (C) 6.8×10^6 · Official APSCHE final key

Q324 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

An element forms a body centered cubic (bcc) lattice with edge length of 300 pm. If the density of the element is 7.2 $\mathrm{g\ cm^{-3}}$, the number of atoms present in 324 g of it approximately is

(A) 3.33×10^{23}
(B) 6.66×10^{23}
(C) 3.33×10^{24}
(D) 6.66×10^{24}

Answer: (C) 3.33×10^{24} · Official APSCHE final key

Q325 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The variation of vapour pressure (b) as a function of temperature (a) is studied for $\mathrm{C_2H_5OC_2H_5}$, $\mathrm{CCl_4}$ and $\mathrm{H_2O}$ at 760 mm Hg and is shown in the figure below. The boiling temperatures of $\mathrm{C_2H_5OC_2H_5}$,

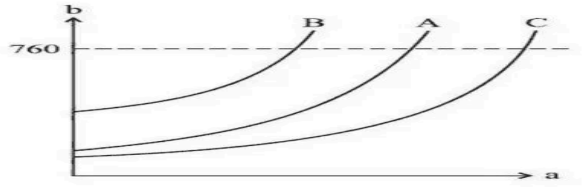
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CCl_4 and H_2O are 308, 350 and 373 K respectively. Curves A, B, C respectively correspond to
(see the figure above)

Question Number : 126 Question Id : 1874634126 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The variation of vapour pressure (b) as a function of temperature (a) is studied for $C_2H_5OC_2H_5$, CCl_4 and H_2O at 760 mm Hg and is shown in the figure below. The boiling temperatures of $C_2H_5OC_2H_5$, CCl_4 and H_2O are 308, 350 and 373 K respectively. Curves A, B, C respectively correspond to

760 mm Hg వద్ద, $C_2H_5OC_2H_5$, CCl_4 మరియు H_2O ల బాష్పపీడనాల (b) ను ఉష్ణోగ్రత (a) పరంగా అధ్యయనంలో క్రింది పటం లభించింది. $C_2H_5OC_2H_5$, CCl_4 మరియు H_2O ల మరుగు ఉష్ణోగ్రతలు వరుసగా 308, 350, 373 K. వక్రాలు A, B, C లు వరుసగా వేటికి సంబంధించినవి.



Options :

1. H_2O, $C_2H_5OC_2H_5$, CCl_4
2. $C_2H_5OC_2H_5$, CCl_4, H_2O
3. CCl_4, $C_2H_5O\,C_2H_5$, H_2O
4. CCl_4, H_2O, $C_2H_5O\,C_2H_5$

(A) H_2O, $C_2H_5OC_2H_5$, CCl_4
(B) $C_2H_5OC_2H_5$, CCl_4, H_2O
(C) CCl_4, $C_2H_5OC_2H_5$, H_2O
(D) CCl_4, H_2O, $C_2H_5OC_2H_5$

Answer: (C) CCl_4, $C_2H_5OC_2H_5$, H_2O · Official APSCHE final key

Q326 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

If the radius of an atom of an element which forms a body centered cubic unit cell is 173.2 pm, the volume of unit cell in cm^3 is

(A) 3.12×10^{-23}
(B) 6.4×10^{-23}
(C) 3.2×10^{-24}
(D) 2.13×10^{-23}

Answer: (B) 6.4×10^{-23} · Checked by our team

Q327 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

If the kinetic energy and RMS speed of a gas at a certain temperature are $4.0\ kJ\ mol^{-1}$ and $5.0 \times 10^4\ cm\ s^{-1}$ respectively. The molecular weight of the gas is

(A) 16
(B) 32
(C) 64
(D) 44

Answer: (B) 32 · Official APSCHE final key

Q328 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

A compound is formed from elements X and Y. The atoms of Y (anions) form ccp lattice. The atoms of X (cations) occupy half of the octahedral voids and half of tetrahedral voids. What is the formula of the compound?

(A) X_3Y_2
(B) X_2Y_3
(C) XY
(D) X_4Y_3

Answer: (A) X_3Y_2 · Official APSCHE final key

Q329 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

If the kinetic energy of O_2 gas is 4.0 $kJ\ mol^{-1}$, its RMS speed in $cm\ s^{-1}$ is

(A) 5.0×10^2
(B) 5.0×10^3
(C) 5.0×10^4
(D) 5.0×10^{-4}

Answer: (C) 5.0×10^4 · Official APSCHE final key

Q330 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

At T (K), copper (atomic mass = 63.5 U) has fcc unit cell structure with edge length of x Å. What is the approximate density of Cu in $g\ cm^{-3}$ at that temperature?
($N_A = 6.0 \times 10^{23}\ mol^{-1}$)

(A) $\frac{42.3}{x^3}$
(B) $\frac{4.23}{x^3}$
(C) $\frac{423}{x^3}$
(D) $\frac{212}{x^3}$

Answer: (C) $\frac{423}{x^3}$ · Official APSCHE final key

Q331 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

The ratio between RMS velocities of H_2 at 50 K and O_2 at 800 K is

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

Answer: (C) 1 : 1 · Official APSCHE final key

Q332 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

Which one of the following statements is **not** correct?

(A) Schottky defect in ionic solids does not change the density of the crystal
(B) Packing efficiency is the percentage of total space filled by the particles
(C) In body centered cubic unitcell, the relationship between atomic radius (r) and the edge length (a) is, $r = \frac{\sqrt{3}}{4}a$
(D) Photovoltaic cell is used for conversion of light energy into electrical energy

Answer: (A) Schottky defect in ionic solids does not change the density of the crystal · Official APSCHE final key

Q333 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Kinetic energy in kJ of 280 g of N_2 at 27°C is approximately (R = 8.314 J mol^{-1} K^{-1})

(A) 18.7
(B) 37.4
(C) 56.1
(D) 74.8

Answer: (B) 37.4 · The council's preliminary key

Q334 TS EAMCET 2018 · 7 May · Shift 1 MCQ

The correct plot of Maxwell-Boltzmann distribution at different temperatures (T) is (Speed = వేగం ; No. of molecules = అణువుల సంఖ్య) *(see the figure above)*

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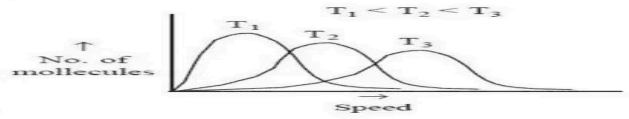
Question Number : 128 Question Id : 4928632688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

The correct plot of Maxwell-Boltzmann distribution at different temperatures (T) is
(Speed = వేగం ; No. of molecules = అణువుల సంఖ్య)

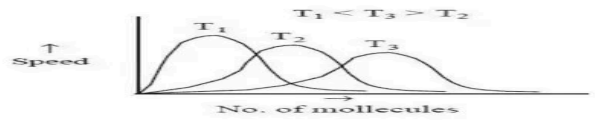
వివిధ ఉష్ణోగ్రత (T) ల వద్ద మాక్స్‌వెల్-బోల్ట్‌జ్‌మాన్ పంపిణీకి సరియైన గ్రాఫ్ ఏది?

Options :

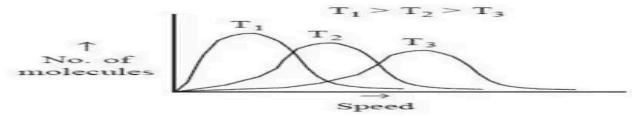
1.



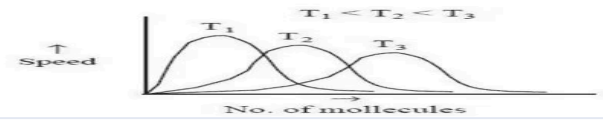
2.



3.



4.



(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (A) · The council's preliminary key

Q335 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A compound having elements X and Y crystalises in a cubic structure, where X is at the corner position and Y is at the center of the cube. The correct formula of the compound is

(A) XY
(B) X_3Y
(C) XY_2
(D) XY_3

Answer: (A) XY · The council's preliminary key

Q336 TS EAMCET 2018 · 5 May · Shift 1 MCQ

$12\ cm^3$ of $SO_{2(g)}$ diffused through a porous membrane in 1 minute. Under similar conditions $120\ cm^3$ of another gas diffused in 5 minutes. The molar mass of the gas in $g\ mol^{-1}$ is

(A) 32
(B) 18
(C) 44
(D) 16

Answer: (D) 16 · The council's preliminary key

Q337 TS EAMCET 2018 · 5 May · Shift 1 MCQ

1 mole of gas A and 1 mole of gas B at $27\,^{\circ}\mathrm{C}$ were pumped into a 24.6 L volume pre-evacuated isolated flask. The catalyst coated inside the flask catalyzes the following reaction $\mathrm{A}_{(g)} + \mathrm{B}_{(g)} \longrightarrow 2\mathrm{D}_{(g)}$ The kinetic energy of D is 98.03 L atm.
Calculate the pressure realized at the end of the reaction.

(A) 1.66 atm
(B) 2.66 atm
(C) 5.33 atm
(D) 4.33 atm

Answer: (B) 2.66 atm · The council's preliminary key

Q338 TS EAMCET 2018 · 5 May · Shift 1 MCQ

Match the following
List - I
a) *(see the figure above)* six circled spin arrows: up, down, up, down, up, down
b) *(see the figure above)* six circled spin arrows: up, up, up, up, up, up
c) *(see the figure above)* six circled spin arrows: up, up, down, up, up, down
List - II
i) Ferromagnetism
ii) Antiferromagnetism
iii) Ferrimagnetism
The correct answer is

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Question Number : 142 Question Id : 4928632542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

Match the following

List - I

(a) ↑↓↑↓↑↓
(b) ↑↑↑↑↑↑
(c) ↑↑↓↑↑↓

List - II

(i) Ferromagnetism
(ii) Antiferromagnetism
(iii) Ferrimagnetism

క్రింది వాటిని జతపరచండి

జాబితా - I

(a) ↑↓↑↓↑↓
(b) ↑↑↑↑↑↑
(c) ↑↑↓↑↑↓

జాబితా - II

(i) ఫెర్రోఅయస్కాంతత్వం
(ii) యాంటిఫెర్రో అయస్కాంతత్వం
(iii) ఫెర్రి అయస్కాంతత్వం

The correct answer is

సరి అయిన జవాబు

Options :

1. (a) (i) (b) (iii) (c) (ii)
2. (a) (iii) (b) (i) (c) (ii)
3. (a) (ii) (b) (i) (c) (iii)
4. (a) (i) (b) (ii) (c) (iii)

(A) (a)-(i), (b)-(iii), (c)-(ii)
(B) (a)-(iii), (b)-(i), (c)-(ii)
(C) (a)-(ii), (b)-(i), (c)-(iii)
(D) (a)-(i), (b)-(ii), (c)-(iii)

Answer: (C) (a)-(ii), (b)-(i), (c)-(iii) · The council's preliminary key

Q339 TS EAMCET 2018 · 5 May · Shift 2 MCQ

The ratio between the RMS velocity of N_2 at $200\ K$ and that of CO at $800\ K$ is
(molecular mass of $N_2 = 28\ g\,mol^{-1}$, molecular mass of $CO = 28\ g\,mol^{-1}$)

(A) 1.00
(B) 0.75
(C) 0.25
(D) 0.50

Answer: (D) 0.50 · The council's preliminary key

Q340 TS EAMCET 2018 · 5 May · Shift 2 MCQ

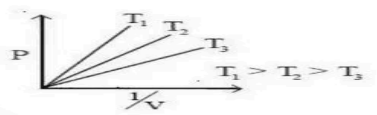
For a fixed mass of an ideal gas the correct representation is
(see the figure above)

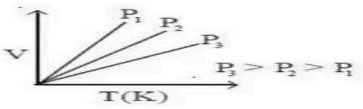
Question Number : 128 Question Id : 4928632368 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

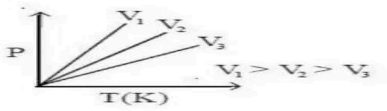
For a fixed mass of an ideal gas the correct representation is

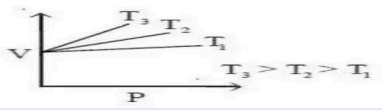
నియమిత ద్రవ్యరాశి గల ఆదర్శవాయువు సరియైనది ఏది?

Options :

1. 

2. 

3. 

4. 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Options (1) or (2) were accepted. More than one answer was accepted. · The council's preliminary key

Q341 TS EAMCET 2018 · 5 May · Shift 2 MCQ

A solid has hcp lattice. Atoms of Z (anions) form hcp lattice. Atoms of X (cations) occupy all the octahedral voids in the lattice. Atoms of Y (cations) occupy half of the tetrahedral voids. What is the molecular formula of the solid?

(A) $\mathrm{X_{2/3}Y_{1/3}Z}$
(B) XYZ
(C) $\mathrm{X_{1/3}Y_{2/3}Z}$
(D) $\mathrm{XYZ_2}$

Answer: (B) XYZ · The council's preliminary key

Q342 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Which of the following represents van der Waal's equation for n moles of the gas?

(A) $\left(P+\frac{a}{v^2}\right)(v-b)=nRT$
(B) $P(v-b)=nRT$
(C) $\left(P+\frac{a}{v^2}\right)v=nRT$
(D) $PV+\frac{an^2}{V}-\frac{abn^3}{V^2}-Pnb=nRT$

Answer: (D) $PV+\frac{an^2}{V}-\frac{abn^3}{V^2}-Pnb=nRT$ · The council's preliminary key

Q343 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The kinetic energy in J of 1 mole of N_2 at 27°C is
($R=8.314\ \text{J mol}^{-1}\text{K}^{-1}$)

(A) 2,494
(B) 18,706
(C) 7,482
(D) 3,741

Answer: (D) 3,741 · The council's preliminary key

Q344 TS EAMCET 2018 · 4 May · Shift 1 MCQ

A compound is formed by elements of X, Y and Z. Atoms of Z (anions) make fcc lattice. Atoms of X (cations) occupy all the octahedral voids. Atoms of Y (cations) occupy $\frac{1}{3}$rd of the tetrahedral voids. The formula of the compound is

(A) $X_3Y_2Z_3$
(B) X_2YZ
(C) XY_2Z
(D) X_2Y_2Z

Answer: (A) $X_3Y_2Z_3$ · The council's preliminary key

Q345 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Helium molecule is two times heavier than hydrogen molecule at 298 K. According to kinetic theory, the average kinetic energy of helium at 298 K is

(A) Two times higher than a hydrogen molecule
(B) Four times higher than a hydrogen molecule
(C) Same as that of a hydrogen molecule
(D) Half of a hydrogen molecule

Answer: (C) Same as that of a hydrogen molecule · The council's preliminary key

Q346 TS EAMCET 2018 · 4 May · Shift 2 MCQ

The ratio between the most probable speed of N_2 at 400 K and CO at 800 K is
(molar mass of N_2 = 28 g mol^{-1}, molar mass of CO = 28 g mol^{-1})

(A) 0.75
(B) 0.25
(C) 0.707
(D) 1.414

Answer: (C) 0.707 · The council's preliminary key

Q347 TS EAMCET 2018 · 4 May · Shift 2 MCQ

NaCl is heated in an atmosphere of sodium vapour. The resultant yellow colour is due to the formation of

(A) Frenkel defect
(B) Schottky defect
(C) F-centers
(D) Impurity defects

Answer: (C) F-centers · The council's preliminary key

Q348 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If the RMS speed of nitrogen at a certain temperature is $3000\ \mathrm{ms}^{-1}$, the approximate kinetic energy of one mole of nitrogen at that temperature in kJ is
(assume nitrogen as ideal gas)

(A) 9.0
(B) 126.0
(C) 90.0
(D) 12.6

Answer: (B) 126.0 · The council's preliminary key

Q349 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If the side length of a face centered unit cell of a metal is 400 pm, approximate radius of the metal in pm is ($\sqrt{2} = 1.414$)

(A) 14.14
(B) 35.3
(C) 176.7
(D) 141.4

Answer: (D) 141.4 · The council's preliminary key

Q350 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If the most probable speed of methane at a certain temperature is $400\ \mathrm{ms}^{-1}$, the kinetic energy of one mole of methane at the same temperature in J is

(A) 1024
(B) 2048
(C) 3072
(D) 1920

Answer: (D) 1920 · The council's preliminary key

Q351 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If a metal crystallises in a face centred cubic structure with metallic radius of 25 pm, the number of unit cells in $1.0\ \mathrm{cm}^3$ of lattice is

(A) 2.828×10^{28}
(B) 1.414×10^{28}
(C) 1.414×10^{24}
(D) 2.828×10^{24}

Answer: (D) 2.828×10^{24} · The council's preliminary key

Q352 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

At same temperature and pressure, the rate of diffusion of gas 'X' is $3\sqrt{3}$ times that of a gaseous hydrocarbon of molar mass 54 g mol^{-1}. The molar mass of X in g mol^{-1} is

(A) 16
(B) 2
(C) 32
(D) 28

Answer: (B) 2 · The council's preliminary key

Q353 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

A metal crystallizes in two phases, one as fcc and other as bcc with unit cell edge lengths of 3.5 Å and 3.0 Å respectively. The ratio of density of fcc and bcc phases approximately is

(A) 1.5 : 1.0
(B) 1.0 : 1.5
(C) 1.26 : 1
(D) 1 : 1.26

Answer: (C) 1.26 : 1 · The council's preliminary key

Q354 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If r_1, r_2 and r_3 represent the most probable speeds of three different gases at the same temperature as shown in figure with molar masses M_1, M_2 and M_3 respectively, the correct order of molar masses

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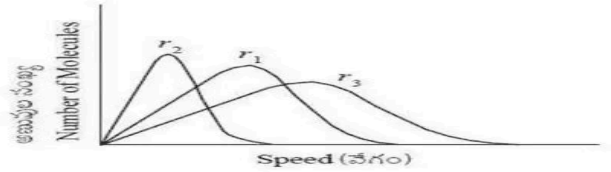
of these gases is

(see the figure above)

Question Number : 126 Question Id : 4557344286 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If r_1, r_2 and r_3 represent the most probable speeds of three different gases at the same temperature as shown in figure with molar masses M_1, M_2 and M_3 respectively, the correct order of molar masses of these gases is

M_1, M_2, M_3 మోలార్ ద్రవ్యరాశులుగల మూడు వాయువుల గరిష్ఠ సంభావ్యత వేగాలు పటంలో చూపినట్లు r_1, r_2, r_3 లు అయిన వాటి మోలార్ ద్రవ్యరాశుల సరియైన క్రమము



Options :

1. $M_1 > M_3 > M_2$
2. $M_3 > M_2 > M_1$
3. $M_2 > M_1 > M_3$
4. $M_2 > M_3 > M_1$

(A) $M_1 > M_3 > M_2$

(B) $M_3 > M_2 > M_1$

(C) $M_2 > M_1 > M_3$

(D) $M_2 > M_3 > M_1$

Answer: (C) $M_2 > M_1 > M_3$ · The council's preliminary key

Q355 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

A metal oxide crystallises in a hexagonal close-packed array of oxide ions with two out of every three octahedral holes occupied by metal ions. The formula of metal oxide is

(A) MO

(B) M_3O_4

(C) M_2O_5

(D) M_2O_3

Answer: (D) M_2O_3 · The council's preliminary key

Q356 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

16g each of H_2, He and O_2 are present in a container exerting 10 atm. pressure at T(K). The pressure in atm exerted by 16g each of He and O_2 in the second container of same volume and temperature is

(A) 1.8
(B) 6.4
(C) 3.6
(D) 5.4

Answer: (C) 3.6 · The council's preliminary key

Q357 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

The total number of body centred lattices possible among the 14 Bravais lattices is

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

Answer: (D) 3 · The council's preliminary key

Q358 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The temperature of 4.0 moles of a gas occupying 5 dm^3 at 3.32 bar is ($R = 0.083\ \mathrm{bar\,dm^3\,K^{-1}\,mol^{-1}}$)

(A) $25\ \mathrm{K}$
(B) $50\ \mathrm{K}$
(C) $75\ \mathrm{K}$
(D) $100\ \mathrm{K}$

Answer: (B) $50\ \mathrm{K}$ · The council's preliminary key

Q359 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A compound is formed by X and Y elements. Atoms of Y (anions) form hcp lattice. Atoms of X (cations) are in some octahedral holes. The formula of the compound is $\mathrm{XY_3}$. What is the fraction of octahedral holes unoccupied by X?

(A) $\frac{1}{2}$
(B) $\frac{2}{3}$
(C) $\frac{3}{4}$
(D) $\frac{1}{5}$

Answer: (B) $\frac{2}{3}$ · The council's preliminary key

Q360 TS EAMCET 2017 · 12 May · Offline MCQ

Which of the following statement is true

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(A) The pressure of a fixed amount of an ideal gas is proportional to its temperature only
(B) Frequency of collisions increases in proportion to the square root of temperature
(C) The value of van der Waals' constant 'a' is smaller for ammonia than for nitrogen
(D) If a gas is expanded at constant temperature, the kinetic energy of the molecules decrease

Answer: (B) Frequency of collisions increases in proportion to the square root of temperature · The council's preliminary key

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Q361 TS EAMCET 2017 · 12 May · Offline MCQ

When helium gas is allowed to expand in to vaccum (sic), heating effect is observed. The reason for this is (Assume He as a non ideal gas)

(A) He is an inert gas
(B) The inversion temperature of Helium is very high
(C) The inversion temperature of Helium is very low
(D) He has the lowest boiling point

Answer: (C) The inversion temperature of Helium is very low · The council's preliminary key

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Q362 TS EAMCET 2017 · 12 May · Offline MCQ

The number of tetrahedral and octahedral voids in CCP unit cell are respectively

(A) 4, 8
(B) 8, 4
(C) 12, 6
(D) 6, 12

Answer: (B) 8, 4 · The council's preliminary key

Q363 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

At $27^{\circ}\mathrm{C}$ in a 10 L flask 4.0 g of an ideal gaseous mixture containing He (molar mass $4.0\ \mathrm{g\,mol^{-1}}$) and Ne (molar mass $20\ \mathrm{g\,mol^{-1}}$) has a pressure of 1.23 atm. What is the mass% of neon? ($R = 0.082\ \mathrm{L\,atm\,K^{-1}\,mol^{-1}}$)

(A) 84.2
(B) 25.2
(C) 74.2
(D) 62.5

Answer: (D) 62.5 · The council's preliminary key

Q364 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

An element has a body centered cubic structure with a unit cell edge length of 400 pm. Atomic mass of an element is $24\ \mathrm{g\,mol^{-1}}$. What is the density of the element?

$(N_A = 6 \times 10^{23}\ \text{mol}^{-1})$

(A) $3.60\ \text{g cm}^{-3}$

(B) $1.80\ \text{g cm}^{-3}$

(C) $1.25\ \text{g cm}^{-3}$

(D) $2.50\ \text{g cm}^{-3}$

Answer: (C) $1.25\ \text{g cm}^{-3}$ · The council's preliminary key

Q365 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

Which one of the following statements is **not** correct ?

(A) The magnitude of the surface tension of a liquid depends on the attractive forces of the molecules.

(B) The surface tension decreases as the temperature is raised.

(C) Liquids tend to rise in the capillary because of surface tension.

(D) On flat surface, liquid droplets are perfectly spherical.

Answer: (D) On flat surface, liquid droplets are perfectly spherical. · The council's preliminary key

Q366 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

An element with molar mass $2.7 \times 10^{-2}\ \text{kg mol}^{-1}$ forms a cubic unit cell with edge length of 405 pm. If its density is $2.7 \times 10^{3}\ \text{kg m}^{-3}$, the nature of cubic unit cell is :
$(N_A = 6.02 \times 10^{23}\ \text{mol}^{-1})$

(A) face centered cubic

(B) simple cubic

(C) body centered cubic

(D) end centered

Answer: (A) face centered cubic · The council's preliminary key

Q367 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

The distribution of molecular velocities of three gases of molar masses M_1, M_2 and M_3 at T(K) are shown below. The correct relation of their molar masses is :

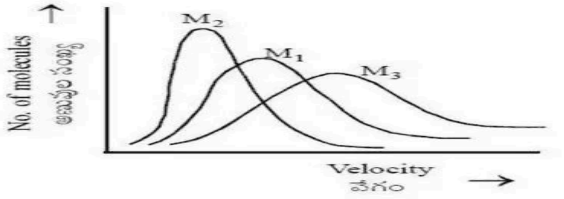
(see the figure above)

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Question Number : 126 Question Id : 1017174286 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The distribution of molecular velocities of three gases of molar masses M_1, M_2 and M_3 a
T(K) are shown below. The correct relation of their molar masses is :

T(K) వద్ద మోలార్ ద్రవ్యరాశులు M_1, M_2, M_3 గల మూడు వాయువుల అణువేగాల పంపిణీలు క్రిం
చూపబడ్డాయి. వాటి మోలార్ ద్రవ్యరాశుల మధ్య గల సరియైన సంబంధం



Options :
1. $M_2 > M_1 > M_3$
2. $M_3 > M_1 > M_2$
3. $M_1 > M_2 > M_3$
4. $M_1 = M_2 = M_3$

(A) $M_2 > M_1 > M_3$
(B) $M_3 > M_1 > M_2$
(C) $M_1 > M_2 > M_3$
(D) $M_1 = M_2 = M_3$

Answer: (A) $M_2 > M_1 > M_3$ · The council's preliminary key

Q368 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

A metal (X) of atomic weight M g mol^{-1} crystallizes in bcc lattice. Its density is d g cm^{-3}. What is the equation for unit cell edge length (a)? (N = Avagadro number)

(A) $a = \dfrac{2M}{Nd}$
(B) $a = \left(\dfrac{2M}{Nd}\right)^{1/2}$
(C) $a = \left(\dfrac{2M}{Nd}\right)^{1/3}$
(D) $a = \left(\dfrac{4M}{Nd}\right)^{1/3}$

Answer: (C) $a = \left(\dfrac{2M}{Nd}\right)^{1/3}$ · The council's preliminary key

Q369 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

If the RMS velocity of an ideal gas is u ms^{-1} at 127 °C, at what temperature its RMS velocity is doubled?

(A) 200 K
(B) 160 K
(C) 1600 K
(D) 800 K

Answer: (C) 1600 K · The council's preliminary key

Q370 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The relationship between the radius (r) of the atom and the edge length (a) of the cubic close packing structure is:

(A) $r = \frac{\sqrt{3}}{4}a$
(B) $r = \frac{a}{2\sqrt{2}}$
(C) $r = \frac{a}{\sqrt{2}}$
(D) $r = \frac{a}{2\sqrt{3}}$

Answer: (B) $r = \frac{a}{2\sqrt{2}}$ · The council's preliminary key

Q371 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

When 2g of a gaseous substance A is introduced into an initially evacuated flask at $25^{\circ}\mathrm{C}$, the pressure is found to be 1atm. 3g of another gaseous substance B is added to it at the same temperature and pressure. The final pressure is found to be 1.5 atm. Assuming ideal gas behaviour, the ratio of molar masses of A and B is :

(A) $1:3$
(B) $3:1$
(C) $2:3$
(D) $3:2$

Answer: (A) $1:3$ · The council's preliminary key

Q372 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

At T(K), 3 moles of hydrogen and 1 mole of N_2 are allowed to react to form ammonia. When 1 mole of ammonia is formed, the total pressure in the vessel is 15 atm. The partial pressure of N_2 in the vessel (in atm) is

(A) 7.5
(B) 2.5
(C) 3.5
(D) 6.5

Answer: (B) 2.5 · The council's preliminary key

Q373 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

Which one of the following statements is correct?

(A) The unit cell lengths of a lattice are a, b and c. The angle between b and c is β.

(B) A metal (M) crystallizes in bcc lattice. The number of atoms of M per unit cell is 2

(C) SiC is an ionic solid

(D) For triclinic lattice, the angles have the following relationship $\alpha = \beta = \gamma = 90^\circ$

Answer: (B) A metal (M) crystallizes in bcc lattice. The number of atoms of M per unit cell is 2 · The council's preliminary key

Q374 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

At T(K), the RMS velocity of He is equal to RMS velocity of SO_2 at 127°C. What is T (in K) ?

(A) 64

(B) 50

(C) 250

(D) 25

Answer: (D) 25 · The council's preliminary key

Q375 TS EAMCET 2016 · 15 May · Offline MCQ

If the kinetic energy in J, of CH_4 (molar mass = 16 g mol^{-1}) at T(K) is X, the kinetic energy in J, of O_2 (molar mass = 32 g mol^{-1}) at the same temperature is

(A) X

(B) 2X

(C) X^2

(D) $\frac{X}{2}$

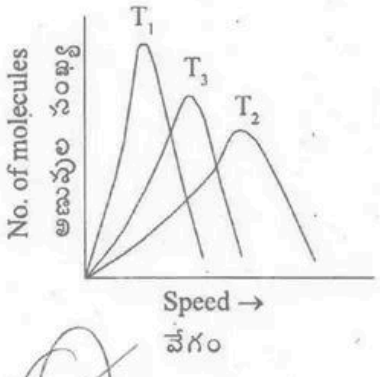
Answer: (A) X · Official TGCHE final key

Q376 TS EAMCET 2016 · 15 May · Offline MCQ

The given figure shows the Maxwell distribution of molecular speeds of a gas at three different temperatures T_1, T_2 and T_3. The correct order of temperatures is :

(see the figure above)

128. The given figure shows the Maxwell distribution of molecular speeds of a gas at three different temperatures T_1, T_2 and T_3. The correct order of temperatures is :
క్రింది ఇవ్వబడిన పటంలో T_1, T_2 మరియు T_3 ఉష్ణోగ్రతల వద్ద ఒక వాయు మాక్స్‌వెల్ అణువేగాల పంపిణీ చూపబడింది. ఉష్ణోగ్రతల సరియైన క్రమం :



(1) $T_1 > T_2 > T_3$ (2) $T_1 > T_3 > T_2$ (3) $T_3 > T_2 > T_1$ (4) $T_2 > T_3 > T_1$

(A) $T_1 > T_2 > T_3$
(B) $T_1 > T_3 > T_2$
(C) $T_3 > T_2 > T_1$
(D) $T_2 > T_3 > T_1$

Answer: (D) $T_2 > T_3 > T_1$ · Official TGCHE final key

Q377 TS EAMCET 2016 · 15 May · Offline MCQ

The packing efficiency of simple cubic (sc), body centred cubic (bcc) and cubic close packing (ccp) lattices follow the order

(A) bcc < ccp < sc
(B) ccp < bcc < sc
(C) sc < ccp < bcc
(D) sc < bcc < ccp

Answer: (D) sc < bcc < ccp · Official TGCHE final key

Q378 AP EAMCET 2016 · 29 Apr · Offline MCQ

Which one of the following is the kinetic energy of a gaseous mixture containing 3 g of hydrogen and 80 g of oxygen at temperature T(K) ?

(A) 3RT
(B) 6RT
(C) 4RT
(D) 8RT

Answer: (B) 6RT · The council's preliminary key

Q379 AP EAMCET 2016 · 29 Apr · Offline MCQ

A, B, C and D are four different gases with critical temperatures 304.1, 154.3, 405.5 and 126.0 K respectively. While cooling the gas which gets liquified first is

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

Answer: (D) C · The council's preliminary key

Q380 AP EAMCET 2016 · 29 Apr · Offline MCQ

Match the following.
LIST - I (magnetic property)
A) Ferromagnetic
B) Anti ferro magnetic
C) Ferri magnetic
D) Para magnetic
LIST - II (substance)
1) O_2
2) CrO_2
3) MnO
4) Fe_3O_4
5) C_6H_6
The correct answer is

(A) A-3, B-2, C-4, D-1
(B) A-2, B-3, C-4, D-1
(C) A-1, B-3, C-5, D-4
(D) A-4, B-2, C-3, D-5

Answer: (B) A-2, B-3, C-4, D-1 · The council's preliminary key

Q381 AP EAMCET 2014 · 22 May · Offline MCQ

The ratio of rates of diffusion of gases X and Y is 1 : 5 and that of Y and Z is 1 : 6. The ratio of rates of diffusion of Z and X is

(A) 1 : 30
(B) 1 : 6
(C) 30 : 1
(D) 6 : 1

Answer: (C) 30 : 1 · The council's preliminary key

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Q382 AP EAMCET 2014 · 22 May · Offline MCQ

Which one of the following elements on doping with germanium, make it a p-type semiconductor ?

(A) Bi
(B) Sb
(C) As
(D) Ga

Answer: (D) Ga · The council's preliminary key

Q383 AP EAMCET 2013 · 10 May · Offline MCQ

At T(k), the ratio of kinetic energies of 4 g of $H_{2(g)}$ and 8 g of $O_{2(g)}$ is :

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

Answer: (D) 8 : 1 · The council's preliminary key

Q384 AP EAMCET 2013 · 10 May · Offline MCQ

The number of octahedral and tetrahedral holes respectively present in a hexagonal close packed (hcp) crystal of 'X' atoms are :

(A) X, 2X
(B) X, X
(C) 2X, X
(D) 2X, 2X

Answer: (A) X, 2X · The council's preliminary key

Q385 AP EAMCET 2012 · 12 May · Offline MCQ

Which one of the following equations represents the variation of viscosity coefficient (η) with temperature (T) ?

(A) $\eta = A\,e^{-E/RT}$
(B) $\eta = A\,e^{E/RT}$
(C) $\eta = A\,e^{-E/kT}$
(D) $\eta = A\,e^{-E/T}$

Answer: (B) $\eta = A\,e^{E/RT}$ · Official APSCHE final key

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Q386 AP EAMCET 2012 · 12 May · Offline MCQ

Which one of the following elements, when present as an impurity in silicon makes it a p-type semiconductor ?

(A) As
(B) P
(C) In
(D) Sb

Answer: (C) In · Official APSCHE final key

Q387 AP EAMCET 2011 · 8 May · Offline MCQ

Which one of the following statements is not correct ?

(A) The fraction of total number of molecules of a gas having most probable velocity increases with an increase in temperature of the gas
(B) The concentration of an ideal gas at 100 K and 0.0821 atm. of pressure is 1.0×10^{-2} mol. lit^{-1} (R = 0.0821 lit. atm. mol^{-1}.K^{-1})
(C) If the rms velocity of an ideal gas at T(K) is 'C' cm. s^{-1}, its rms velocity at 4T(K) is '2C' cm.s^{-1}
(D) The average kinetic energy of gas molecules is proportional to their absolute temperature

Answer: (A) The fraction of total number of molecules of a gas having most probable velocity increases with an increase in temperature of the gas · The council's preliminary key

Q388 AP EAMCET 2011 · 8 May · Offline MCQ

If the length of the unit cell is 5 $\mathring{A}$, the smallest distance in $\mathring{A}$ between the two neighbouring metal atoms in a face centred cubic lattice is :

(A) 2.50
(B) 5.00
(C) 7.07
(D) 3.535

Answer: (D) 3.535 · The council's preliminary key

Q389 AP EAMCET 2010 · 30 May · Offline MCQ

The ratio of anion radius to cation radius of a crystal is $10 : 9.3$. Then, the coordination number of the cation in the crystal is :

(A) 2
(B) 4
(C) 6
(D) 8

Answer: (D) 8 · Official APSCHE final key

Q390 AP EAMCET 2010 · 30 May · Offline MCQ

CH_4 diffuses two times faster than a gas X. The number of molecules present in 32 g of gas X is : (N is Avogadro number)

(A) N
(B) $\frac{N}{2}$
(C) $\frac{N}{4}$
(D) $\frac{N}{16}$

Answer: (B) $\frac{N}{2}$ · Official APSCHE final key

Q391 AP EAMCET 2010 · 30 May · Offline MCQ

Assertion (A) : White tin is an example of tetragonal system.
Reasoning (R) : For a tetragonal system $a = b = c$ and $\alpha = \beta = \gamma \neq 90^\circ$.
The correct answer is :

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

Answer: (C) (A) is true but (R) is not true · Official APSCHE final key

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