

JEE Main 2023 Answer Key

Date and Shift: April 12 Shift 1

Memory-Based Questions

Physics Answer Key

Question No.	Answer Key
1	A
2	1.20
3	A
4	A
5	0.16 V
6	B
7	A
8	2
9	D
10	D

Chemistry Answer Key

Question No.	Answer Key
1	9
2	A
3	C
4	A
5	232
6	0.72
7	3
8	C
9	18
10	A

Mathematics Answer Key

Question No.	Answer Key
1	7
2	7
3	575
4	120
5	D
6	B
7	1260
8	A
9	B
10	D

JEE Main 2023 Physics Question Paper

Question 1. If a planet has mass equal to 16 times the mass of earth, and radius equal to 4 times that of earth. The ratio of escape speed of a planet to that of earth is?

- A. 2:1
- B. 1:2
- C. $\sqrt{2}$:1
- D. 4:1

Question 2. A particle is thrown vertically upward with initial velocity of 150m/s. Find the ratio of its speed at $t = 3s$ and $t = 5s$. (Take $g = 10ms^{-2}$)

Question 3. Find the ratio of de-Broglie wavelength of a proton and a α - particle, when accelerated through a potential difference of 2V and 4V respectively.

- A. 4:1
- B. 2:1
- C. 1:8
- D. 16:1

Question 4. If a body of mass 5 kg is in equilibrium due to forces F_1 , F_2 and F_3 . F_2 and F_3 are perpendicular to each other. If F_1 is removed then find the acceleration of the body. Given $F_2 = 6\text{N}$ and $F_3 = 8\text{N}$

- A. 2 m/s^2
- B. 3 m/s^2
- C. 4 m/s^2
- D. 5 m/s^2

Question 5. 64 identical balls made of conducting material each having a potential of 10 mV are joined to form a bigger ball. The potential of a bigger ball is?

Question 6. Ratio between rms speed of Ar to the most probable speed of O_2 at 27°C is

- A. $\sqrt{8/\pi}$
- B. $\sqrt{8/3}$
- C. $\sqrt{4/\pi}$
- D. $\sqrt{4/3}$

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Question 7. If an object cools down from 80°C to 60°C in 5 min in a surrounding of temperature 20°C . The time taken to cool from 60°C to 40°C will be (Assume Newton's law of cooling to be valid)

- A. $25/3$ min
- B. 5 min
- C. $25/4$ min
- D. 9 min

Question 8. In a ice cube of thickness 24 cm, has bubbles trapped in it as shown in figure. If apparent side are 12 cm and 4 cm from side 1 and side 2 respectively, then refractive index of ice cube is

- A. $4/3$
- B. $3/2$
- C. 2
- D. 2.4

Question 9. A dipole having dipole moment M is placed in two magnetic fields of strength B_1 and B_2 respectively. The dipole oscillates 60 times in 20 seconds in the B_1 magnetic field and 60 oscillations in 30 seconds in the B_2 magnetic field. Then find the B_1/B_2

- A. $3/2$
- B. $2/3$
- C. $4/9$
- D. $9/4$



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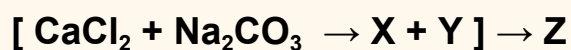
Question 10. Suppose a situation in which two planets orbits around the sun in the same orbit. If the mass of planet 1 is twice the mass of planet 2, then what do they have same?

- A. Potential energy
- B. Kinetic energy
- C. Total energy
- D. Velocity

JEE Main 2023 Chemistry Question Paper

Question 1. pH of 1 litre of HCL solution is 1. How much water (in litres) is added to make pH=2?

Question 2. Consider the following reaction sequence:



- A. X: CaCO_3 , Y: NaCl , Z: NaCl
- B. X: CaO , Y: $\text{NaCl} + \text{CO}_2$, Z: KCl
- C. X: CaO , Y: $\text{NaCl} + \text{CO}_2$, Z: NaCl
- D. X: CaCO_3 , Y: NaCl , Z: KCl

Question 3. Match the following

Column 1 (Type of hydride)	Column II
A. Electron	1. MgH_2
B. Electron precise	2. HF
C. Electron rich	3. CH_4
D. Saline Hydride	4. B_2H_6

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

Question 4. Match the columns

Column I		Column II	
(a)	Biodegradable	(p)	polyacrylonitrie
(b)	Synthetic	(q)	PHBV
(c)	Natural	(r)	dacron
(d)	Polyester	(s)	Rubber

- A. a-q; b-p; c-s; d-r
 B. a-q; b-p; c-r; d-s
 C. a-p; b-q; c-s; d-r
 D. a-q; b-r; c-s; d-p

Question 5. A metal chloride contains 55% by mass of chlorine. 100 mL of vapours gives 0.57 gm of chlorine at STP. Calculate the molecular mass of metal chloride. (Nearest integer)

Question 6. Given $P_i = 3 \text{ atm}$

$$V_{\text{initial}} = 2 \text{ L}$$

$$V_{\text{final}} = 3 \text{ L}$$

$$T = 350 \text{ K}$$

If isothermal reversible process is carried out, calculate ΔS for system (in Joules)

Question 7. How many of the given metals will show photoelectric effect when light of 400 nm falls on below metal?

Metal	Li	Na	K	Mg	Cu	Ag
W(eV)	2.42	2.3	2.25	3.7	4.8	4.3

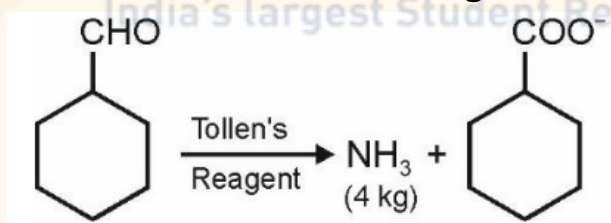
Question 8. Select correct statements about lead storage battery:

- A. PbSO_4 converts into PbO_2 at anode during discharging
- B. PbSO_4 converts into PbO_2 at cathode during discharge
- C. 38% H_2SO_4 solution is taken as the electrolyte
- D. H_2SO_4 is produced during discharging

Question 9. The number of sp^2 hybridized carbon atoms in the following peptide is

Ala – Phe – Gly – Ala – Phe - Ley

Question 10. Calculate mass of Tollen's Reagent Required?



- A. 18.70 kg
- B. 37.40 kg
- C. 9.35 kg
- D. 55.10 kg

JEE Main 2023 Mathematics Question Paper

Question 1. Two circles having radius r_1 and r_2 touch both the coordinate axes. Line $x + y = 2$ makes intercept as 2 on both the circles. The value of $r_1^2 + r_2^2 - r_1r_2$ is:

- A. $9/2$
- B. 6
- C. 7
- D. 8

Question 2. ${}^nC_n / n+1 + {}^nC_{n-1}/n + \dots + \frac{1}{2} {}^nC_1 + {}^nC_0 = 255/8$, Then value of n is

Question 3. If the value of $\int_{-0.15}^{0.15} |100x^2 - 1| dx = k/3000$, then the value of k is?

Question 4. $N > 40000$, where N is divisible by 5. How many such 5 digit numbers can be formed using 0,1,3,5,7,9 without repetition.

Question 5. If $(1+x^2)dy = y(y-x)dx$ and $y(1) = 1$. Then $y(2\sqrt{2})$ is:

- A. $4/\sqrt{2}$
- B. $3/\sqrt{2}$
- C. $1/\sqrt{2}$
- D. $\sqrt{2}$

Question 6. For the expression $(1-x)^{100}$. Then sum of coefficient of first 50 terms is:

- A. ${}^{99}C_{49}$
- B. $-({}^{100}C_{50})/2$
- C. $-{}^{99}C_{49}$
- D. $-{}^{101}C_{50}$

Question 7. Three numbers a, b, c are in A.P. and they are used to make a 9-digits number using each digit thrice, such that at least 3 consecutive digits are in A.P. then number of such numbers is?

Question 8. Given A, B, C represents angles of a $\triangle ABC$ and $\cos A + 2 \cos B + \cos C = 2$ and $AB = 3$ and $BC = 7$ then $\cos A - \cos C$ is?

- A. $-10/7$
- B. $10/7$
- C. $5/7$
- D. $-5/7$



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Question 9. Positive numbers a_1, a_2, \dots, a_5 are in geometric progression. Their mean and variance are $31/10$ and m/n respectively. The mean of the reciprocals is $31/40$, then $m + n$ is?

- A. 209
- B. 211
- C. 113
- D. 429

Question 10. Area of region enclosed by curve $y = x^3$ and its tangent at $(-1, -1)$

- A. 4
- B. 27
- C. $4/27$
- D. $27/4$



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