JEE Main 2023 Answer Key

Date and Shift: April 6 Shift 1 **Memory-Based Questions**

Physics Answer Key

Question No.	Answer Key
1	A
2	B
3	2
4	420 Hz
5	25
6	A
7	A
8	B
9	A
10	C

Chemistry Answer Key

Question No.	Answer Key
1	B
2	425
3	A
4	A
5	A
6	B
7	B
8	18.52
9	B
10	D

Mathematics Answer Key

Question No.	Answer Key
1	3520
2	6
3	A
4	B
5	C
6	C
7	A
8	C
9	1
10	50

JEE Main 2023 Physics Question Paper

Question 1. Find the radius of the orbit corresponding to the 4th excited state in Li++. (a_0 is the radius of first orbit in H-atom)

A. $25/3a_0$
B. $16/3a_0$
C. $25a_0$
D. $12a_0$

Question 2. If the height of the tower used for LOS communication is increased by 21%, the percentage change in range is?

A. 5%
B. 10%
C. 15%
D. 12%

Question 3. A block of mass 100 gm is placed on a smooth surface, moves with acceleration of a = 2x, then the change in kinetic energy can be given as ($x^n/10$), find the value of n.

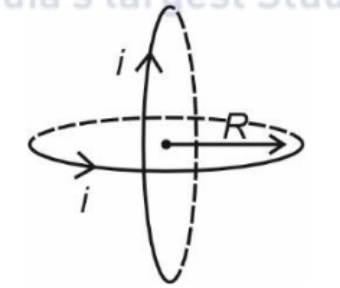
Question 4. A car is moving with a speed of 15 m/s towards a stationary wall. A person in the car pressed the horn and experienced the change in frequency of 40 Hz due to reflection from the stationary wall. Find the frequency of the horn. (Use v_{sound} = 330 m/s)

Question 5. If the length of a conductor is increased by 20 percent and cross-sectional area is decreased by 4 percent , then calculate the percentage change in the resistance of the conductor.

Question 6. Assertion (A) : Earth has atmosphere and moon doesn't
Reason (R) : escape speed on moon is less than that Earth.

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

Question 7. Two identical current carrying coils with same centre are placed with their planes perpendicular to each other as shown.
If i = √2A and radius of coils is R = 1 m then magnetic field at centre C is equal to?



A. μ_0
B. $\mu_0/2$
C. $2\mu_0$
D. $\sqrt{2}\mu_0$

Question 8. On a planet (mass density) is same as that of earth while mass of planet is twice than that of earth. Ratio of weight of a body on the surface of planet to that on earth is equal to?

A. 1
B. $(2)^{1/3}$
C. $(2)^{-1/3}$
D. 2

Question 9. Assertion (A): Range of a horizontal projectile is maximum when angle of projection is θ = 45°.
Reason (R): Range is maximum when sin(2θ) = 1.

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

Question 10. Kinetic energy of electron, proton and a particle is given as K, 2K and 4K respectively, then which of the following gives the correct order of De-Broglie wavelengths of electron, proton and a particle

A. $\Lambda_p > \Lambda_\alpha > \Lambda_e$
B. $\Lambda_\alpha > \Lambda_p > \Lambda_e$
C. $\Lambda_e > \Lambda_p > \Lambda_\alpha$
D. $\Lambda_e > \Lambda_\alpha > \Lambda_p$

JEE Main 2023 Chemistry Question Paper

Question 1. Polymer which is named as orlon is:

A. Polyamide
B. Polyacrylonitrile
C. Polycarbonate
D. Polyethene

Question 2. If the radius of ground state hydrogen is 51 pm, find out the radius of 5^{th} orbit of Li^{2+} ions. (closest integer)

Question 3. Which of the following have square pyramidal structure?

A. $XeOF_4$
B. BrF_3
C. XeF_4
D. XeO_3

Question 4. We are given some diseases in Column-II. Column-I contains name of some vitamins and their deficiencies will cause :

Column-I	Column-II
(A) Vitamin A	(p) Scurvy
(B) Vitamin B2 (Riboflavin)	(q) Xerophthalmia
(C) Vitamin B1 (Thiamine)	(r) Cheilosis
(D) Vitamin C	(s) Beri Beri

A. A(q); B(r); C(s); D(p)
B. A(r); B(q); C(p); D(s)

C. A(q); B(r); C(p); D(s)
D. A(p); B(r); C(s); D(q)

Question 5. Which compound is added to cement to increase its setting time?

A. Gypsum
B. Lime stone
C. Clay
D. Calcium carbonate

Question 6. Assertion: Magnetic moment of $[Fe(H_2O)_6]^{3+}$ is 5.92 BM and that of $[Fe(CN)_6]^{3-}$ is 1.73 BM
Reason: Oxidation state of Fe in both the complexes is +3.

A. Both Assertion and Reason are correct and Reason is the correct explanation of Assertion
B. Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion
C. Reason is correct but Assertion is not correct
D. Reason is incorrect but Reason is correct

Question 7. A binary compound has Y-atoms forming FCC unit cell and another type of X-atoms occupying 1/3rd of tetrahedral voids. Find out the molecular formula of the compound

A. XY
B. X_2Y_3
C. X_3Y_2
D. XY

Question 8. Some amount of urea is added to 1000 gm of H_2O due to which vapour pressure decreases by 25% of the original vapour pressure. Find out mass of urea added (Round off to two decimal places)

Question 9. Strong reducing & oxidizing agent among the following respectively.

A. Ce^{+3} & Ce^{+4}
B. Eu^{+2} & Ce^{+4}
C. Ce^{+4} & Tb^{+4}
D. Ce^{+4} & Eu^{+2}

Question 10. Photochemical smog is most likely to be found in which of the following industrial areas?

A. Marshy areas
B. Himalayan valley in winters
C. Warm moist climates
D. Sunny dessert areas

JEE Main 2023 Mathematics Question Paper

Question 1. Sum of first 20 terms
5, 11, 19, 29, 41

Question 2. Coefficient of x^{18} in $(x^4 - 1/x^3)^{15}$

Question 3. If the image of point P(1, 2, 3) about the plane 2x — y + 3z = 2 is Q, then the area of triangle PQR, where coordinates of R is (4, 10, 12)

A. √1531 / 2
B. √1675 / 2
C. √2443 / 2
D. √1784 / 2

Question 4. If 5 f(x) + 4f (1/x) = 1/x + 3, then 18 $\int_1^2$ f (x)dx is:

A. 10log 2 + 6
B. 10log 2 - 6
C. 5log 2 + 6
D. 5log 2 - 6

Question 5. The sum of roots of $|x^2 - 8x + 15| - 2x + 7 = 0$ is:

A. 11 + √3
B. 11 - √3
C. 9 + √3
D. 9 - √3

Question 6. Mean of first 15 numbers is 12 and variance is 14. Mean of next 15 numbers is 14 and variance is a. If variance of all 30 numbers is 13, then a is equal to

A. 12
B. 14
C. 10
D. 3

Question 7. From the top of 30 m tower AB the angle of depression to another tower's QP base and top is 60º and 30º respectively. Another point C lies on tower AB such that CQ is parallel to BP (where B and P are the base of towers). Then the area of BCQP is?

A. 600 (√3 - 1)
B. 600 (√3 + 1)
C. 600
D. 300 (√3 - 1)

Question 8. Number of words with (or) without meaning using all the letters of the word ASSASSINATION such that all the vowels come together is?

A. 38004
B. 38042
C. 50400
D. 60200

Question 9. Matrix A is 2 × 2 matrix and $A^2 = I$, no elements of the matrix is zero, let sum of diagonal elements is a and det(A) = b, then the value of $3a^2 + b^2$ is?

Question 10. The number of points of non-differentiability of the function f(x) = [4 + 13sinx] in (0, 2π) is ____.