JEE Main 2023 Question Paper with Answer Key April 6 Shift 2 (Memory-Based)

JEE Main 2023 Physics Question Paper

Question 1. An object starts moving with an initial speed 10m/s and acceleration 2 m/s² along positive x - direction. The time taken to attain 60 m/s speed is?

    A. 25s
    B. 20s
    C. 30s
    D. 15s

Answer. A

Question 2. If W is the weight on the surface of Earth then weight of same body at a height $R_e/4$ above the surface of earth is equal to (R_e = Radius of Earth)

    A. 4/5 W
    B. 16/25 W
    C. 25/16 W
    D. 5/4 W

Answer. B

Question 3. The potential energy of an electron is defined as $U = \frac{1}{2} mw^2 x^2$ and follows Bohr's law. Radius of orbit as function of n depends on? (w is same constant)

A. n^2
B. $1/\sqrt{n}$
C. $\sqrt{n}$
D. $n^{2/3}$

Answer. C

Question 4. Find the ratio of root mean square speed of oxygen gas molecules to that of hydrogen gas molecules, if temperature of both the gases are same.

A. 1/4
B. 1/16
C. 1/32
D. 1/8

Answer. A

Question 5. A solid sphere and a ring have equal masses and equal radius of gyration. If the sphere is rotating about its diameter and ring about an axis passing through and perpendicular to its plane, then the ratio of radius is $\sqrt{x}/2$ then find the value of x.

Answer. 5

Question 6. A proton is projected with speed v in magnetic field B of magnitude 1 T. The angle between velocity and magnetic field is 60^0 as shown below. Kinetic energy of a proton is 2 eV (mass of proton = 1.67×10^{-27} kg, e = 1.6×10^{-19} C).The pitch of the path of proton is approximately ?

A. 6.28×10^{-2} m
B. 6.28×10^{-4} m
C. 3.14×10^{-2} m

D. 3.14 x 10^{-4} m

Answer. B

Question 7. For two different photosensitive materials having work function and 2 respectively, are illuminated with light of sufficient energy to emit electrons. If the graph of stopping potential versus frequency is drawn, for these two different photosensitive materials the ratio of slope of graph for these two materials is

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

Answer. A

Question 8. Choose the incorrect statement from the given statements.

A. Planets revolve around the Sun with constant linear speed.
B. Energy of the planet in elliptical orbit is constant.
C. Satellites in circular motion have constant energy.
D. Body falling towards the Earth results in negligible displacement of the Earth.

Answer. A

Question 9. The temperature of the body drops from 60°C to 40°C in 7 min. The surrounding temperature is 10°C. The temperature of the body drops from 40°C to T°C in 7 min. Find the value of T

A. 16°C
B. 20°C
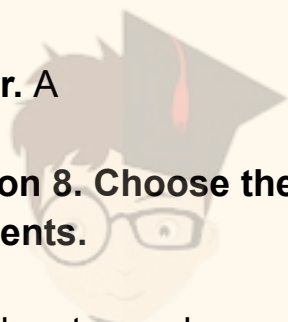
C. 28°C

D. 36°C

Answer. C

Question 10. Radius of the first orbit in H-atom is a_0. Then, deBroglie wavelength of electron in the third orbit is

A. $3\pi a_0$

B. $6\pi a_0$

C. $9\pi a_0$

D. $12\pi a_0$

Answer. B

JEE Main 2023 Chemistry Question Paper

Question 1. Nessler's reagent does not have?

A. K

B. Hg

C. N

D. I

Answer. C

Question 2. In which form does $BeCl_2$ exist in solid state, vapour state and high temperature?

Answer. Solid state: Polymer

Vapour state: Dimer

High temperature: Monomer

Question 3. Which of the following is obtained on electrolysis of brine solution?

    A. NaOH
    B. H_2 gas
    C. Cl_2 gas
    D. Na

Answer. D

Question 4. Which of the following has the highest hydration energy?

    A. Be^{+2}
    B. Mg^{+2}
    C. Ca^{+2}
    D. Ba^{+2}

Answer. A
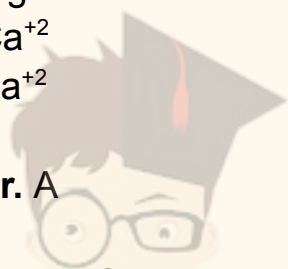
Question 5. Oxidation state of Mn in $KMnO_4$ changes by 3 units in which medium?

    A. Strongly acidic
    B. Strongly basic
    C. Aqueous neutral
    D. Weakly acidic

Answer. C

Question 6. Which of the following is most basic?

    A. Tl_2O_3
    B. Tl_2O_2

C. Cr_2O_3
D. B_2O_3

Answer. B

Question 7. IUPAC name of the compound $K_3[Co(C_2O_4)_3]$ is

A. Potassium trioxalatocobaltate (III)
B. Potassium trioxalatocobaltate (III)
C. Potassium cobalt tris oxalate (II)
D. Potassium oxalato cobaltate (III)

Answer. B

Question 8. During detection of Lead, Formation of which of the following compounds is not used as a confirmatory test.

A. $PbSO_4$
B. $Pb(NO_3)_2$
C. $PbCrO_4$
D. PbI_2

Answer. B

Question 9. Consider the following:

I. D.D.T.
II. Aldrin
III. Sodium arsenite
IV. Sodium chlorate

How many of these are pesticides?

A. 1
B. 2

C. 3

D. 4

Answer. B

Question 10.

Amino Acid	Letter Code
1. Alanine	P. N
2. Asparagine	Q. A
3. Aspartic acid	R. R
4. Arginine	S. D

A. 1 - Q; 2 - S; 3 - P; 4 - R
B. 1 - Q; 2 - S; 3 - R; 4 - P
C. 1 - S; 2 - P; 3 - R; 4 - Q
D. 1 - S; 2 - P; 3 - P; 4 - R

Answer. A

JEE Main 2023 Mathematics Question Paper

Question 1. Rank of the word PUBLIC is?

Answer. 582

Question 2. If f(x) + f (π-x) = π² then $\int_0^\pi$ f(x) sinx dx ?

Answer. π^2

Question 3. The area enclosed by y = |x-1| + |x-2| and y = 3 is

Answer. 4

Question 4. Find all the four letter words with two vowels and 2 consonants from the word UNIVERSE?

Answer. 504

Question 5. The system of the equations

$x + y + z = 6$
$x + 2y + \alpha z = 5$
$x + 2y + 6z = \square$ has

    A. Infinitely many solution for $\alpha = 6$, $\square = 3$
    B. Infinitely many solution for $\alpha = 6$, $\square = 5$
    C. Unique solution for $\alpha = 6$, $\square = 5$
    D. No solution for $\alpha = 6$, $\square = 5$

Answer. B

Question 6.
Let
Statement 1 : $(2002)^{2023} - (1919)^{2002}$ is divisible
by 8.
Statement 2 : $13.13^n - 12n - 13$ is divisible by 144 n ϵ N, then

    A. Statement-1 and statement-2 both are true
    B. Only statement-1 is true
    C. Only statement-2 is true
    D. Neither statement-1 nor statement-2 are true

Answer. C

Question 7. If $1^2 - 2^2 + 3^2 - 4^2 + \ldots..2022^2 + 2023^2 = m^2n$, where $m, n \in N$ and $m > 19$ then $n^2 - m$ is

    A. 615
    B. 562
    C. 812
    D. 264

Answer. A

Question 8. If $a \neq \pm b$ and are purely real, $z \in$ complex number, $Re(az^2 + bz) = a$ and $Re(bz^2 + az) = b$ then number of value of z possible is

    A. 0
    B. 1
    C. 2
    D. 3

Answer. A

Question 9. If V is volume of parallelepiped whose three coterminous edges are a, b, c, then volume of a parallelepiped whose coterminous edges are a, b+c, a+2b+3c is

    A. 6V
    B. V
    C. 2V
    D. 3V

Answer. B

Question 10.
S1 : $(p \Rightarrow q) \vee (\sim p \wedge q)$ is a tautology
S2 : $(q \Rightarrow p) \Rightarrow (\sim p \wedge q)$ is a contradiction

A. Both S1 and S2 are true
B. Neither S1 or S2 are true
C. Only S1 are true
D. Only S2 are true

Answer. B

Question 11. Three dice are thrown. Then the probability that no outcomes is similar is p/q then q – p is (where p and q are co-prime)

Answer. 4

Question 12. If $(21)^{18} + 20 \cdot (21)^{17} + (20)^2 \cdot (21)^{16} + \ldots\ldots (20)^{18} = k (21^{19} – 20^{19})$ then k =

A. 21/20
B. 1
C. 20/21
D. 0

Answer. B