JEE Main 2023 Question Paper with Answer Key
April 10 Shift 2 (Memory-based)

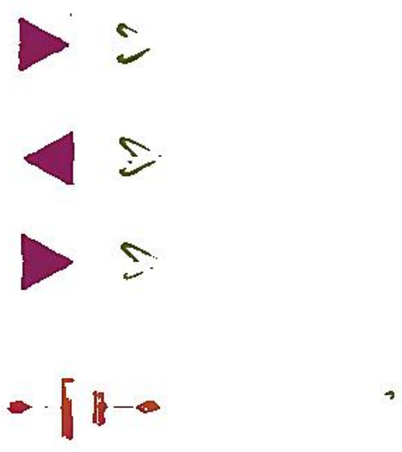
JEE Main 2023 Physics Question Paper

Question 1. An object moves x distance with speed v1 and next x distance with speed v2. The average velocity v is related to v1 and v2 as

A. v = (v1 + v2)/2
B. 1/v = 1/v1 + 1/v2
C. v = (2v1 v2) / (v1 + v2)
D. v = (v1 - v2) / 2

Answer. C

Question 2. Following circuit contains diodes with forward bias having resistance 25 Ω, and reverse bias having infinite resistance. The ratio of I_1/I_2 is equal to

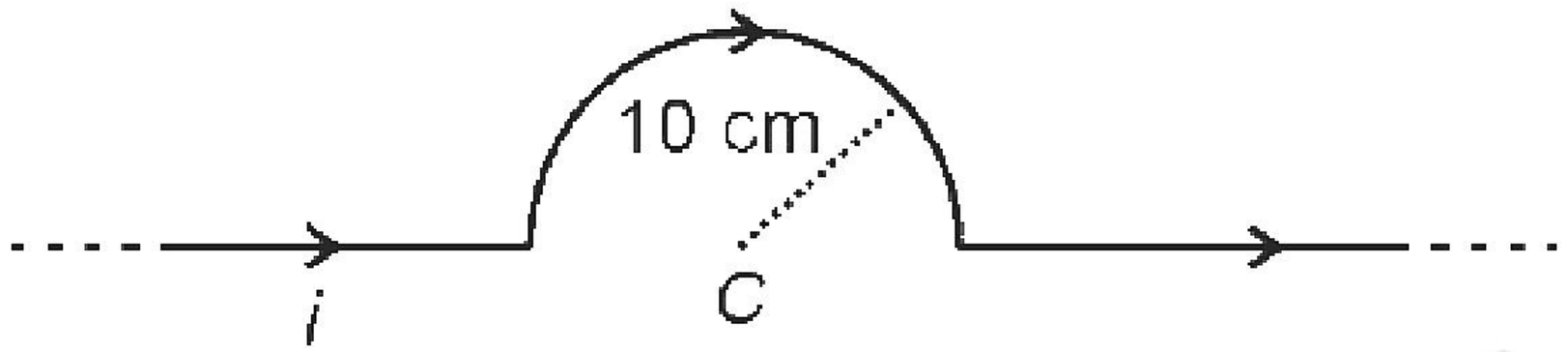


A. 1
B. 2
C. 3

D. 4

Answer. B

Question 3. An infinitely-long conductor has a current 14 A flowing as shown in the figure. Find the magnetic field at centre C.



A. 88 μT
B. 44 μT
C. 10 μT
D. 120 μT

Answer. B

Question 4. If half life for a radioactive decay reaction is T. Find the time after which 7/8th of initial mass decays

A. 3T
B. 2T
C. T/2
D. 4T

Answer. A

Question 5. Assertion (A):- fan spins even after switch is off
Reason (R) :- Fan in rotation has rotational inertia.

A. A is correct and R is correct explanation of A
B. A is correct and R is incorrect explanation of A
C. A is correct and R is correct but R is not correct explanation of A

D. Both (A) and (R) are incorrect

Answer. A

Question 6. When electric field is applied to the electrons in a conductor it starts

A. Moving in straight line
B. Drifting from higher potential to lower potential
C. Drifting from lower potential to higher potential
D. Moving with constant velocity

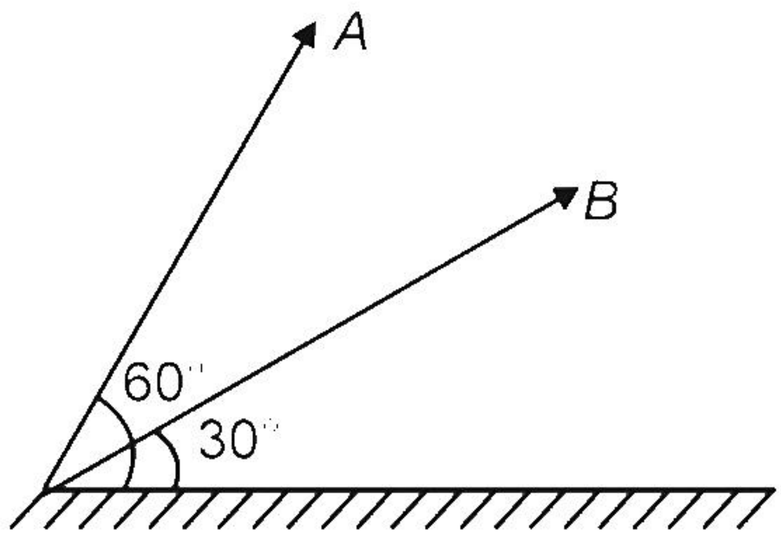
Answer. C

Question 7. Wire A and B have their Young's moduli in the ratio 1:3, area of cross section in the ratio of 1:2 and lengths in ratio of 3:4. If same force is applied on the two wires to elongate then ratio of elongation is equal to

A. 8:1
B. 1:12
C. 1:8
D. 9:2

Answer. D

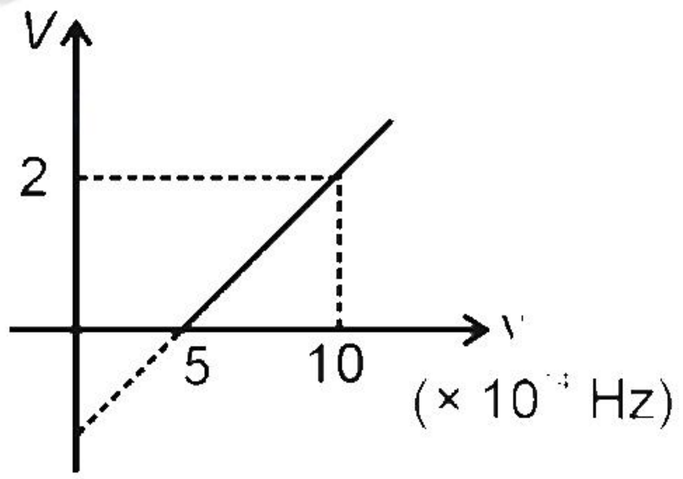
Question 8. Two projectiles A and B are projected from the same point on ground with same speed of projection as shown. Find the ratio of maximum height attained by A to that of B.



A. 3:1
B. 1:3
C. √3:1
D. √3:2

Answer. A

Question 9. Based on given graph between stopping potential and frequency of irradiation, work function of metal is equal to



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

Answer. C

Question 10. Assertion (A): Acceleration due to gravity is minimum at equator.
Reason (R): Rotation of earth influences acceleration.

A. A is correct, R is correct explanation of A
B. A is correct, R is incorrect explanation of A
C. A is correct and R is incorrect
D. Both A and R are incorrect

Answer. A

JEE Main 2023 Chemistry Question Paper

Question 1. Delicate balance of CO_2 and 0_2 is not disturbed by:

A. Deforestation
B. Photosynthesis
C. Burning of coal
D. Burning of petroleum

Answer. B

Question 2. For a metal ion magnetic moment is calculated to be 4.9BM. Find the number of unpaired.

Answer. 4

Question 3.The increasing order of metallic character

A. Be > Ca > K
B. K > Ca > Be
C. Ca > K > Be
D. K > Be > Ca

Answer. B

Question 4. What process is used to make soap from fat?

A. Saponification
B. Electrolysis
C. Solvay process
D. Haber process

Answer. A

Question 5. An unknown organic compound is heated with fuming HNO_3. The reaction mixture is treated with aq $BaCl_2$ solution which gives white precipitate. Identify the unknown organic compound.

A. Phenylalanine
B. Proline
C. Cysteine
D. Valine

Answer. C

Question 6.During bleeding from cut $FeCl_3$ is used to stop bleeding as

A. Cl^- cause coagulation
B. Ferric ion cause coagulation
C. $FeCl_3$ dilutes blood
D. Bleeding does not stop

Answer. B

Question 7. How many electrons are gained by $MnO^{\ominus}_4$ in strongly alkaline medium?

Answer. 1

Question 8. For a first-order reaction, if the value of $t_{1/2}$ is T, then the value of $t_{7/8}$ will be_____ T.

Answer. 3

Question 9. Find out difference in oxidation state of Xe in completely Hydrolysed form of XeF_4 and XeF_6

Answer. 0

Question 10. NH_3, NO, N_2, F_2, CO, CO_2, H_2O, and XeF_4
Fill the number of above molecules having only two lone pair of electrons.

Answer. 3 (N_2, CO and H_2O)

JEE Main 2023 Mathematics Question Paper

Question 1. Let a circle of $x^2 + y^2 = 16$ and line passing through (1,2) cuts the circle at A and B then the locus of the mid-point of AB is:

A. $x^2 + y^2 + x + y = 0$
B. $x^2 + y^2 - x + 2y = 0$

C. $x^2 + y^2 - x - 2y = 0$
D. $x^2 + y^2 + x + 2y = 0$

Answer. C

Question 2. The sum of all 4 digit numbers using the digits 1,2,2,3 is?

Answer. 26464

Question 3. 4,11,21,34….. Find the value of $(S_{29} - S_9) / 60$?

Answer. 223

Question 4. The coefficient of x and x^2 in $(1 + x)^p (1 – x)^q$ are 4 and – 5, then 2p + 3q is

Answer. 63

Question 5. If a dice is thrown n-times and probability of getting 7 times odd is equal to 9 times even. Then P(2 even) is $K/2^{15}$ then K is

A. 58
B. 60
C. 48
D. 65

Answer. B

Question 6. If area bounded by region $\{x, y)| |x^2 – 2| \leq y \leq x\}$ is A, then $6A + 16\sqrt{2}$ is?

Answer. 27

Question 7. $y = f(x)$ is a quadratic function passing through $(-1, 0)$ and tangent to it at $(1, 1)$ is $y = x$. Find x intercept by normal at point $(\alpha, \alpha + 1)$, $(\alpha > 0)$

A. 7
B. –7
C. 5
D. –5

Answer. A

Question 8. The equation of conic is $19x^2 + 15y^2 = 285$. A concentric circle with radius 4 units is given then angle of common tangent made by minor axis of ellipse is

A. $\pi/3$
B. $\pi/2$
C. $\pi/6$
D. $\pi/4$

Answer. A

Question 9. 8 persons has to travel from A to B in 3 allotted cars. If a car can carry maximum 3 persons. Then find the number of ways they can travel.

A. 1880
B. 1800
C. 1680
D. 1600

Answer. C

Question 10. Let α be the remainder $(22)^{2022} + (2022)^{22}$ is divided by 3 and $\llcorner$ be the remainder when the same is divided by 7 then $\alpha^2 + \llcorner^2$ is?

Answer. 5