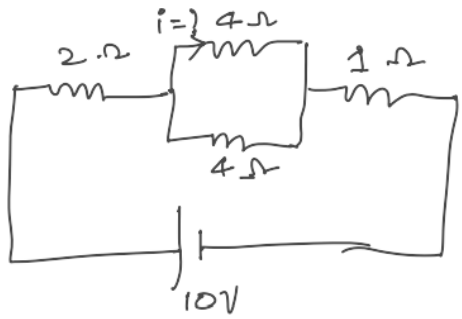
JEE-Main-29-01-2024 (Memory Based)
[EVENING SHIFT]

Physics

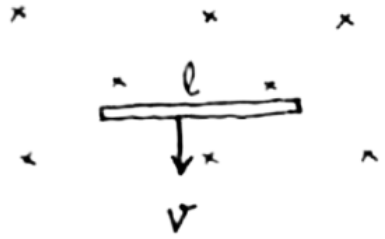
Question: Find out the current i.



Options:
(a) 1 A
(b) 2 A
(c) 3 A
(d) 4 A
Answer: (a)

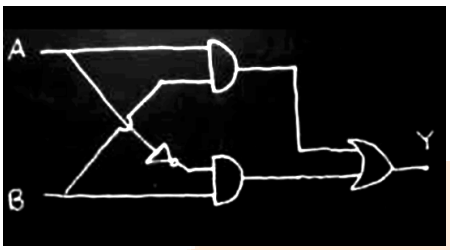
Question: Two equal charges of masses m_1 & m_2 are sent in a transverse magnetic field by accelerating through same potential difference. Find the ratio of their radii inside?
Options:
(a) $\sqrt{\frac{m_2}{m_1}}$
(b) $\sqrt{\frac{m_1}{m_2}}$
(c) $\frac{m_1}{m_2}$
(d) $\frac{m_2}{m_1}$
Answer: (b)

Question: A rod is dropped as shown where horizontal component of Earth's magnetic field is B_H.
Find EMF (t)?



$B_H = 0.6 \times 10^{-4}$ T

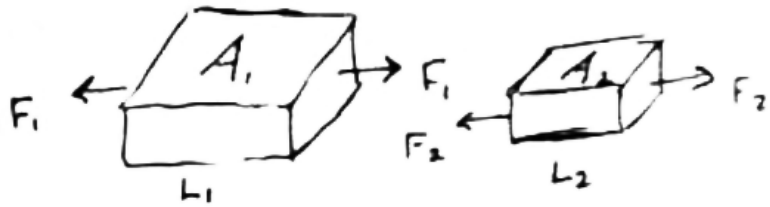
V = 10 m/s l = 5 m

Question: 

Find Y truth table?

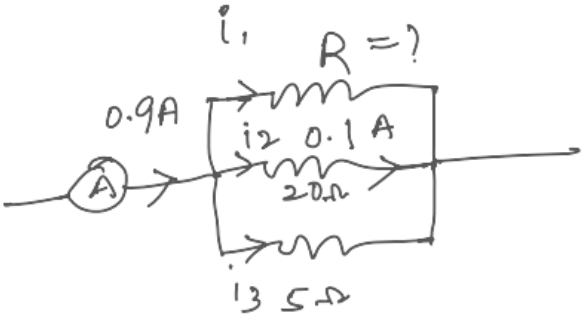
Question: Two blocks of equal volume have same elongations for deforming forces find F_1/F_2?

$$\frac{A_1}{A_2} = \frac{4}{1}$$



Options:
(a) 4 : 1
(b) 1 : 4
(c) 16 : 1
(d) 1 : 16
Answer: (c)

Question: Find out The resistance R in the Given Circuit

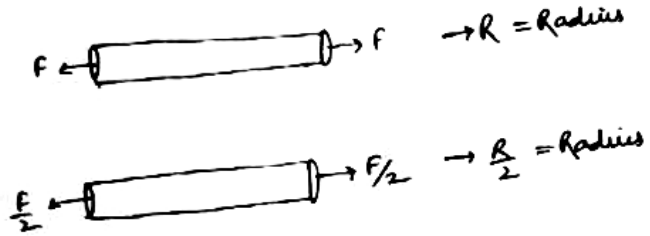


Options:
(a) 2 Ω
(b) 3 Ω
(c) 4 Ω
(d) 5 Ω
Answer: (d)

Question: Time period of a particle performing SHM is 6π s. Find the time taken by the particle to go from x = A to x = A/2
Options:
(a) π s
(b) π/2 s
(c) 3π/2 s
(d) 3π s
Answer: (a)

Question: For an ideal gas, pressure is 1.38 atm and number of molecules are 2×10^{25} per m^3 Find the temperature of the gas ?
Options:
(a) 1500 K
(b) 1000 K
(c) 500 K
(d) 250 K
Answer: (c)

Question: Two Rods of same length and material is applied with the forces F and F/2 respectively. If the cross sectional radii are R and R/2 then find the ratio of the extensions



Options:
(a) 2:1
(b) 1:2
(c) 1:4
(d) 4:1
Answer: (b)

Question: A particle is tied to a rope. If its moving such that it just completes the vertical circle. Find the ratio of kinetic energy at lowermost point & upper most point respectively?
Options:
(a) 5:1
(b) 3:2
(c) 2:1
(d) 1:5
Answer: (a)

Question: Bob of pendulum of length l is released from horizontal position. If 10% of energy is lost then find the velocity on reaching the lowest point
Options:
(a) √(9gl/5)
(b) √(3gl/5)
(c) √(3gl)
(d) √(5gl)

Answer: (a)

Question: Two particles each of charge q are accelerated by same potential difference and projected into the same magnetic field. Ratio of Radii is given then find the ratio of Mass.

Question: A planet revolving around sun in a circular orbit of radius R has a time period T_1. Another planet revolving around sun in a circular orbit of radius R/4 has a time period T_2. Find T_2/T_1

Options:

(a) 1:8

(b) 8:1

(c) 4:1

(d) 1:4

Answer: (a)

Question: S1: Positive charge is present on the nucleus and electrons revolve around the nucleus in Rutherford's model

S2: Plum pudding is a special case of Rutherford model.

Options:

(a) Both S1 & S2 are false

(b) Both S1 & S2 are true

(c) S1 is true but S2 is false

(d) S2 is true but S1 is false

Answer: (c)

Question: In a single slit diffraction experiment, wavelength used is 6000 Å. The distance between 1st and 3rd minima is 3mm. If screen is 50 cm away from the slit, find the slit width

Options:

(a) 0.1 mm

(b) 0.2 mm

(c) 0.3 mm

(d) 0.4 mm

Answer: (b)

Question: An electromagnetic wave is travelling in positive x direction. Electric field at a location is given by $\vec{E} = 9.6\hat{j}$ (N/C). What is the value of $\vec{B}$ at this location?

Options:

(a) $3.2\times10^{-8}\hat{k}$ Tesla

(b) $28.8\times10^{8}\hat{k}$ Tesla

(c) $-3.2\times10^{-8}\hat{k}$ Tesla

(d) $-28.8\times10^{8}\hat{k}$ Tesla

Answer: (a)

Question: The distance between real object and virtual Image is given that is 15 cm, the magnification is 2. Find the focal length of Mirror.

Options:

(a) f = -10 cm

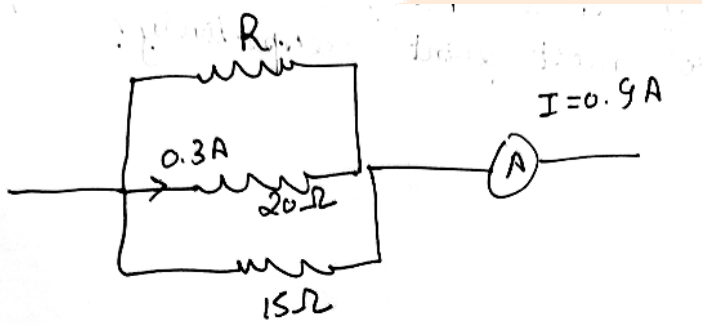
(b) f = 10 cm

(c) f = -5 cm

(d) f = 5 cm
Answer: (a)

Question: n moles of triatomic gas (f = 6) and 2 mole of monatomic gas are mixed together to give a mixture of 5 degrees of freedom. Find 'n'
Options:
(a) 1
(b) 4
(c) 3
(d) 5
Answer: (b)

Question: Below Current is given & Ammeter Reads 0.9 A & Current in 20 Ω is 0.3 A. Find Value of R



Options:
(a) 10 Ω
(b) 20 Ω
(c) 30 Ω
(d) 40 Ω
Answer: (c)

Question: Electric field is given in a region $\vec{E} = 6\hat{i} + 5\hat{j} + 3\hat{k}$ N/C. Find flux linkage through a surface area 30 m2 that is in YZ plane?
Options:
(a) 100 Wb
(b) 130 Wb
(c) 150 Wb
(d) 180 Wb
Answer: (d)