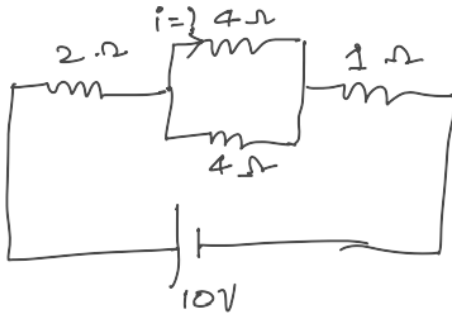


## JEE-Main-29-01-2024 (Memory Based) [EVENING SHIFT]

### 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?

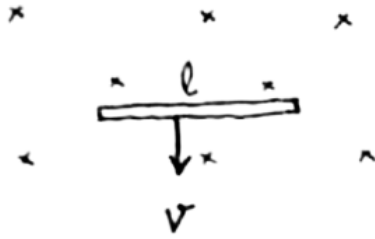
**Options:**

- (a)  $\sqrt{\frac{m_2}{m_1}}$
- (b)  $\sqrt{\frac{m_1}{m_2}}$
- (c)  $\frac{m_1}{m_2}$
- (d)  $\frac{m_2}{m_1}$

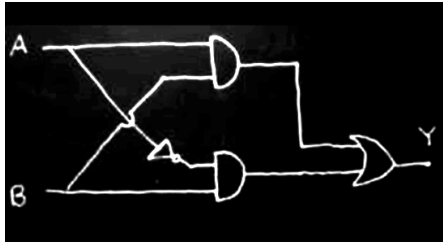
**Answer:** (b)

**Question:** A rod is dropped as shown where horizontal component of Earth's magnetic field is  $B_H$ .

Find EMF (t)?



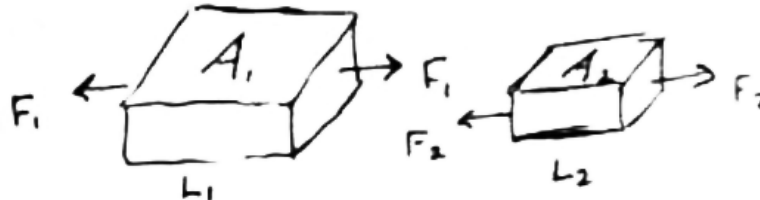
$B_H = 0.6 \times 10^{-4} \text{ T}$   
 $v = 10 \text{ m/s } l = 5 \text{ m}$



**Question:** Find Y truth table?

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

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

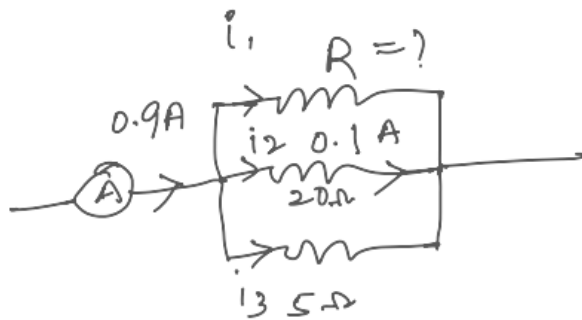


**Options:**

- (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  $\Omega$
- (b) 3  $\Omega$
- (c) 4  $\Omega$
- (d) 5  $\Omega$

**Answer:** (d)

**Question:** Time period of a particle performing SHM is  $6\pi$  s. Find the time taken by the particle to go from  $x = A$  to  $x = A/2$

**Options:**

- (a)  $\pi$  s
- (b)  $\pi/2$  s
- (c)  $3\pi/2$  s
- (d)  $3\pi$  s

**Answer: (a)**

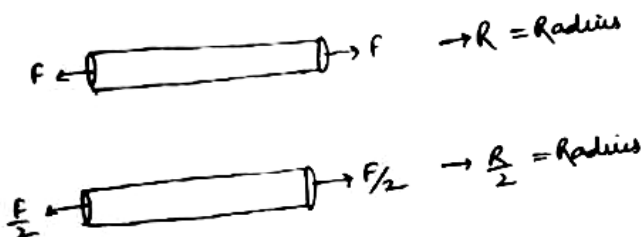
**Question:** For an ideal gas, pressure is 1.38 atm and number of molecules are  $2 \times 10^{25}$  per  $m^3$ . Find the temperature of the gas ?

**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)  $\sqrt{(9gl/5)}$
- (b)  $\sqrt{(3gl/5)}$
- (c)  $\sqrt{(3gl)}$
- (d)  $\sqrt{(5gl)}$



**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  $6000 \text{ \AA}$ . The distance between 1st and 3rd minima is  $3\text{mm}$ . If screen is  $50 \text{ cm}$  away from the slit, find the slit width

**Options:**

- (a)  $0.1 \text{ mm}$
- (b)  $0.2 \text{ mm}$
- (c)  $0.3 \text{ mm}$
- (d)  $0.4 \text{ mm}$

**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)  $3.2 \times 10^{-8} \hat{k}$  Tesla
- (b)  $28.8 \times 10^8 \hat{k}$  Tesla
- (c)  $-3.2 \times 10^{-8} \hat{k}$  Tesla
- (d)  $-28.8 \times 10^8 \hat{k}$  Tesla

**Answer: (a)**

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

**Options:**

- (a)  $f = -10 \text{ cm}$
- (b)  $f = 10 \text{ cm}$
- (c)  $f = -5 \text{ cm}$

(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

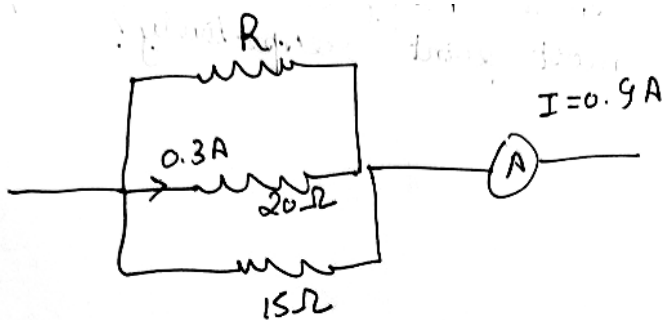
(b) 4

(c) 3

(d) 5

**Answer: (b)**

**Question:** Below Current is given & Ammeter Reads 0.9 A & Current in  $20\ \Omega$  is 0.3 A. Find Value of R



**Options:**

(a)  $10\ \Omega$

(b)  $20\ \Omega$

(c)  $30\ \Omega$

(d)  $40\ \Omega$

**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  $30\ \text{m}^2$  that is in YZ plane?

**Options:**

(a) 100 Wb

(b) 130 Wb

(c) 150 Wb

(d) 180 Wb

**Answer: (d)**