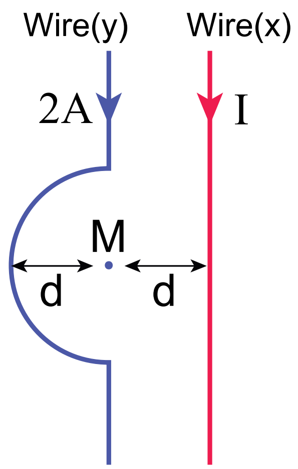
1



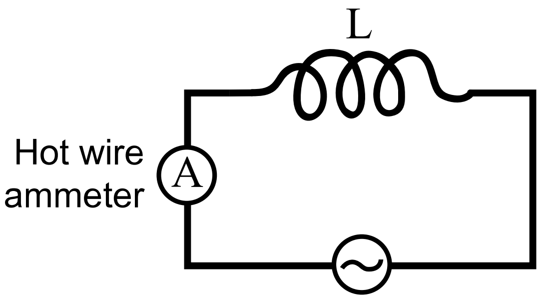
The figure illustrates two current - carrying conductors.

A currant of intensity (I) passes through conductor (x) while a current of intensity (2A) passes through conductor (y).

then the current (I) that causes the magnetic flux density at point (M) to be zero =............

- π A
- $\frac{\pi}{2}$ A
- $\frac{\pi}{4}$ A
- 2π A

2

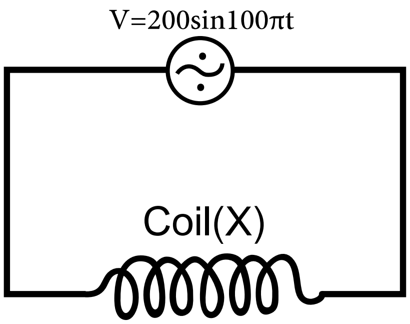


An AC circuit contains AC source its maximum e.m.f =250V, and an inductive coil of negligible ohmic resistance and hot wire ammeter of resistance 12Ω connected in series,

if the reading of the ammeter =10A. so the inductive reactance of the coil = ...

- **12.98Ω**
- **21.93Ω**
- **17.67Ω**
- **5.68Ω**

3



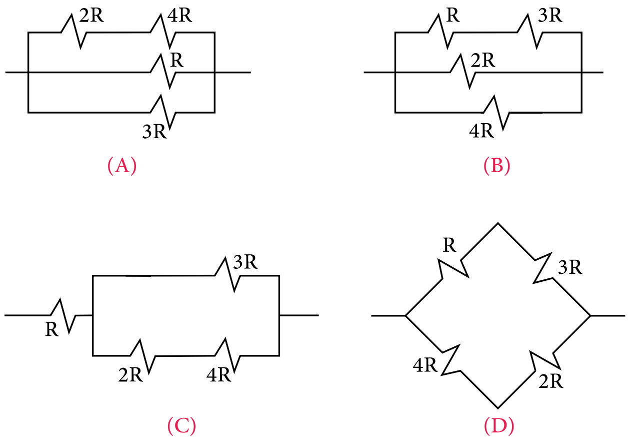
The figure illustrates an AC source, whose instantaneous voltage is given by the equation. ($V = 200 \sin 100 \pi t$).

the source is connected to an inductive coil (x) of self inductance (L) and negligible ohmic resistance.

given that the effective value of current passing in tne circuit is 2A, what modification is required to double the effective value of current?

- **connecting another coil of (0.23H) parallel to the coil (x)**
- **connecting another coil of (0.23H) in series to coil (x)**
- **connecting another coil of (0.32H) parallel to the coil (x)**
- **connecting another coil of (0.32H) in series to coil (x)**

4



Which combination of the resistors shown in the figure gives on equivalent of (R)?

- **B**
- **A**
- **D**
- **C**

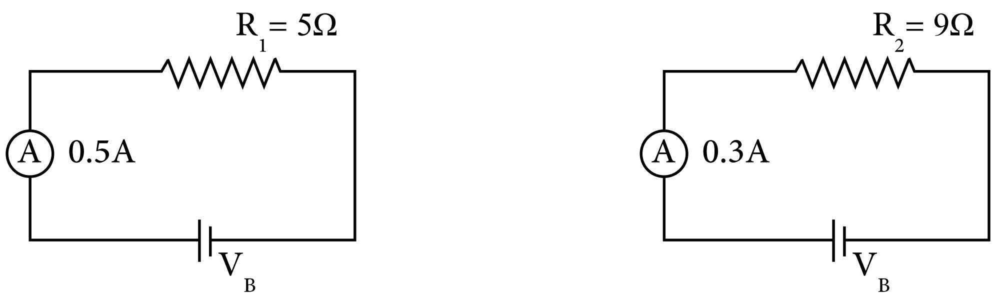
5

A 10 μ F capacitor is connected to 1000Hz oscillator with a maximum e m f of 5V,

then the maximum value of the current in the capacitor circuit = ...

- **0.3A**
- **0.8A**
- **0.6A**
- **1.2A**

6



A cell of unknown e m f is connected to a resistance (R_1) and a current of 0.5 passes in the cell.

when (R_1) is replaced by another (R_2), a current of 0.3A passes in the cell.

So, the e.m.f of the cell =.....................

- **3 volts**
- **1.5 volts**
- **1.2 volts**
- **2 volts**

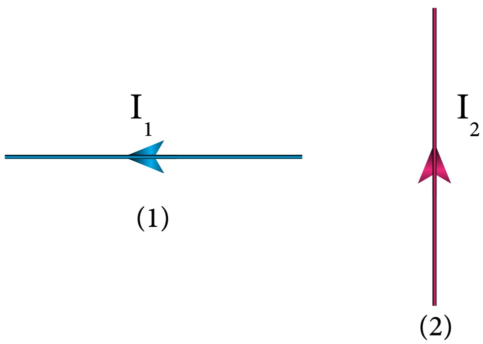
7

A circular coil of 30 turns and cross section area of $10Cm^2$ is placed in a magnetic field of flux density 0.3T.

A current of (2A) is passed in the coil. knowing that the direction of the magnetic dipole moment makes $30°$ to the field direction, so the magnitude of the magnetic torque =.........

- $9 \times 10^{-3} N.m$
- $9\sqrt{3} \times 10^{-3} N.m$
- $18 \times 10^{-3} N.m$
- $18\sqrt{3} \times 10^{-3} N.m$

8



You have two straight wires (1,2) in one plane, perpendicular to each other.

the wire (1) is free to move while the wire (2) is fixed.

an electric current (I_1) and (I_2) passes through them respectively so the direction of motion of wire (1) due to the effect of the magnetic field arising form the current in wire (2) is ....

- **up the page**
- **down the page**
- **out of the page**
- **into the page**

9

An AC dynamo of 100 turns and cross - sectional area = 250 Cm^2,

rotates in a magnetic field of flux density 200 mT,

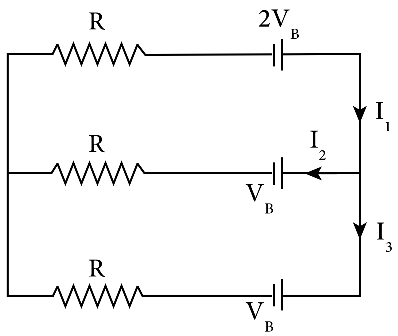
starting from the perpendicular position to the field, where the emf reaches

its maximum value 100 times in one second.

So, the value of the effective emf induced = ...

- **111.1 v**
- **222.2 v**
- **157.1 v**
- **314.3 v**

10



Using the data in figure the ratio between ($\frac{I_2}{I_1}$) = ...

- $\frac{1}{2}$
- $\frac{2}{1}$
- $\frac{3}{1}$
- $\frac{1}{3}$

11

A coil of AC generator consists of 12 turns, each of area A =0.08 m^2

and total resistance of the coil wire is 22 Ω.

the coil rotates in 0.6T magnetic field to produce an AC of frequency 50Hz,

Then, the maximum induced current when the out put terminals are connected to a negligible - resistance conductor equals ....

- **8.22A**
- **11.8A**
- **18.5A**
- **23.4A**

12

An electric bell of power (1Watt) when a current of 0.5A passes through it.

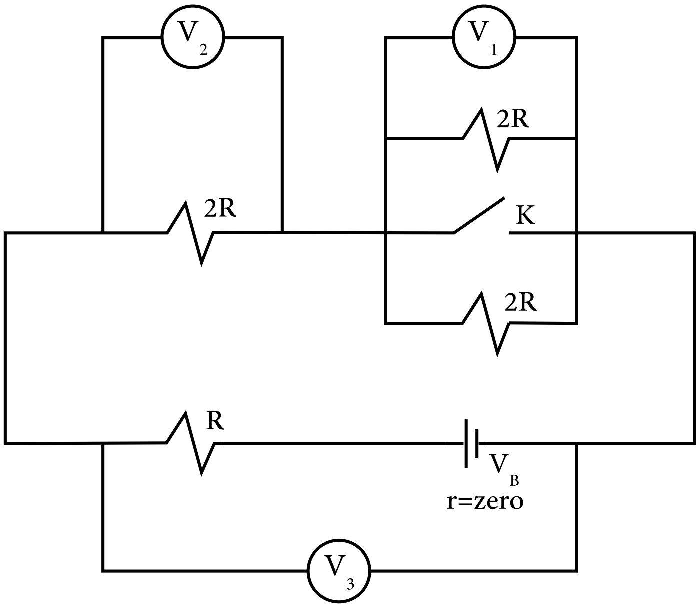
It is connected to a transformer of efficiency 95% and the number of turns

its secondary coil is $\frac{1}{100}$ **of that in its primary coil.**

So, the voltage of the source connected to the primary coil equals ....

- **210.53v**
- **105.26v**
- **110.34v**
- **215.62v**

13

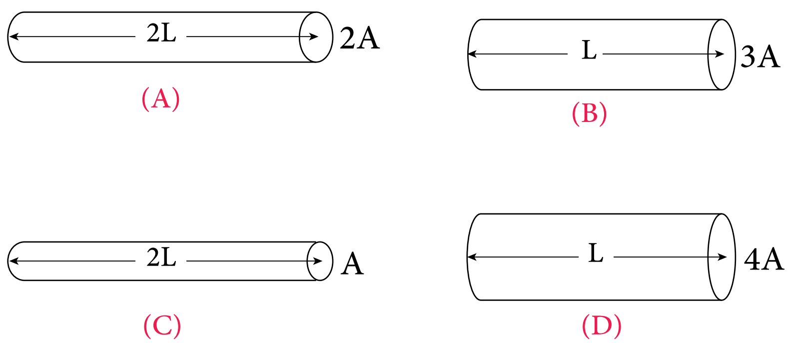


When the switch K is closed, which row shows the correct readings of the meters v_1 , v_2 , v_3

V_1	V_2	V_3	
becomes zero	increases	decreases	A
increases	increases	decreases	B
becomes zero	decreases	increases	C
increases	increases	increases	D

- **A**
- **B**
- **C**
- **D**

14

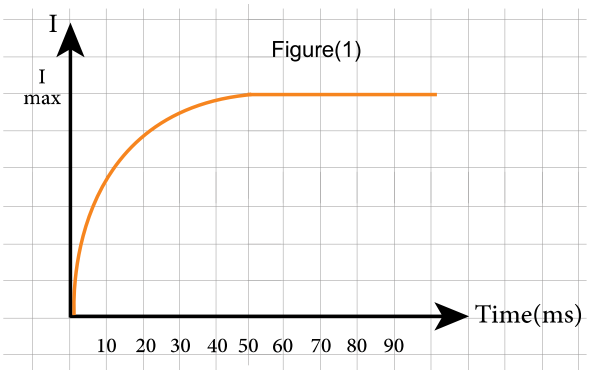


The figure shows four uniform conductors made of the same material, but of different dimensions.

their correct arrangement ascendingly according to their electrical resistance, starting form the least to the greatest resistance is.................. .

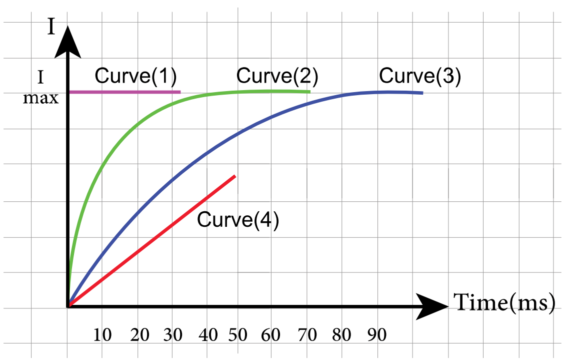
- D → B → A → C
- B → C → A → D
- C → A → B → D
- D → A → C → B

15



An iductive coil of inductance (L) is connected to a battery the graph no (1) represents the growth of the electric current on switching on the circuit.

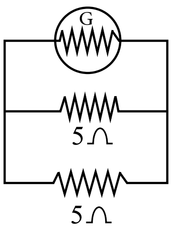
which one of the following curves represents the growth of the current if a soft iron core exists inside the coil on switching on the circuite?



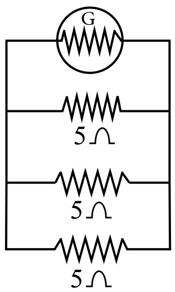
- **curve 3**
- **curve 1**
- **curve 2**
- **curve 4**

16

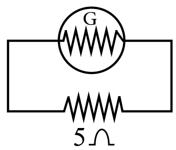
A sensitive galvanometer its resistance = 15Ω was connected to different shunts to convert it to an ammeter of different range in each case.



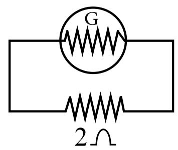
Figure(1)



Figure(2)



Figure(3)



Figure(4)

Which figure represents the ammeter that has maximum range scale?

- **figure (2)**
- **figure (1)**
- **figure (3)**
- **figure (4)**

17

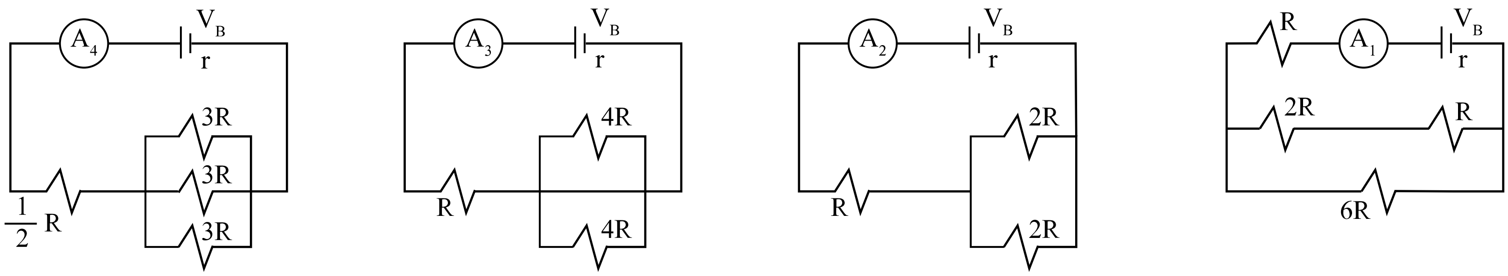
An ohmmeter is connected with an external resistor (x) of resistance 400Ω .

the pointer deflected to $\frac{3}{4}$ galvanometer scale. if (x) is replaced with another resistor (y) of 6000Ω.

So, the pointer deflects to .... of the galvanometer scale.

- $\frac{1}{6}$
- $\frac{5}{6}$
- $\frac{1}{5}$
- $\frac{3}{5}$

18

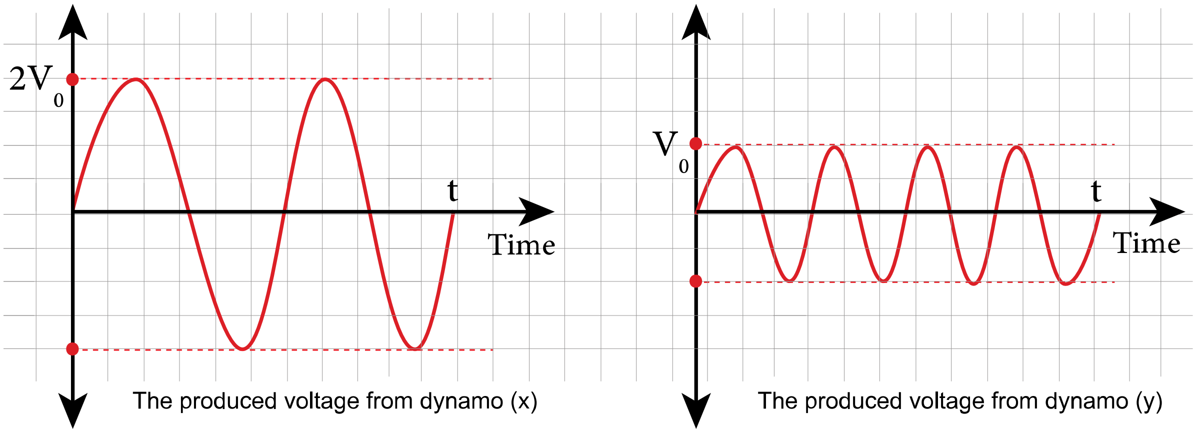


Each of the four electric circuits contains an ammeter.

What is the correct arrangement of the reading A_1 , A_2 , A_3 , A_4 of the four ammeter?

- $A_3 > A_4 > A_2 > A_1$
- $A_2 > A_1 > A_3 > A_4$
- $A_1 > A_2 > A_4 > A_3$
- $A_3 > A_1 > A_2 > A_4$

19



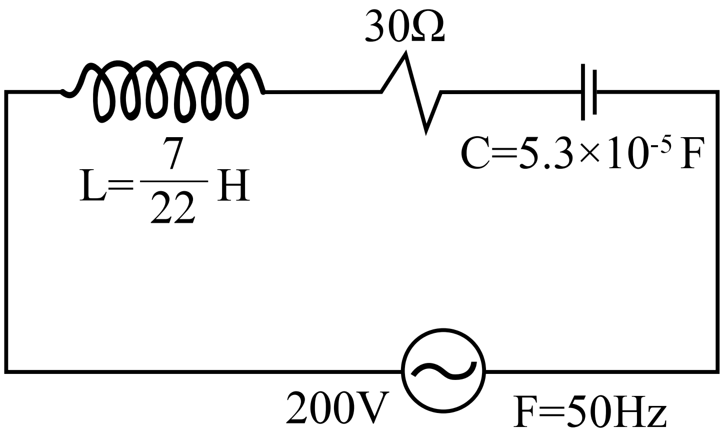
Each graph represents a number of voltage cycles generated by a different dynamo (X) and (Y) during the same interval of time (t).

If the two dynamo coils have the same cross - sectional area and rotate in a magnetic field of the same strength

the ratio $= \dfrac{\text{number of turns in coil y}}{\text{number of turns in coil x}}$ **......................**

- $\frac{1}{4}$
- $\frac{1}{2}$
- $\frac{1}{6}$
- $\frac{1}{8}$

20

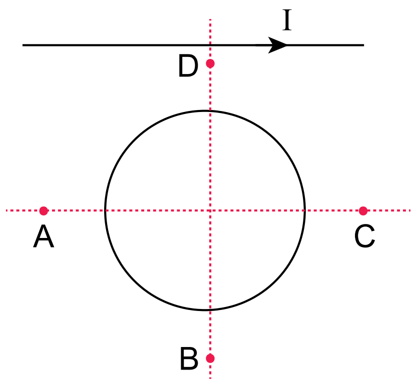


In the figure (R . L . C) circuit connected with AC source of emf (200V , 50Hz) using the data on the figure

the impedance of the circuit equals...............

- **50**Ω
- **40**Ω
- **30**Ω
- **100**Ω

21



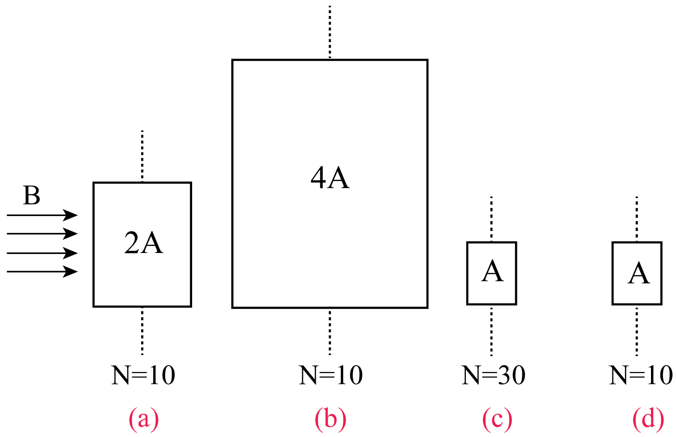
A metal ring is in the same plane as a straight wire that carries an electric current (I) as shown in figure.

If the ring is moved and conseqently a current is induced through it in a clock wise direction.

the direction in which the ring has been moved was towards the point.................. .

- **D**
- **B**
- **A**
- **C**

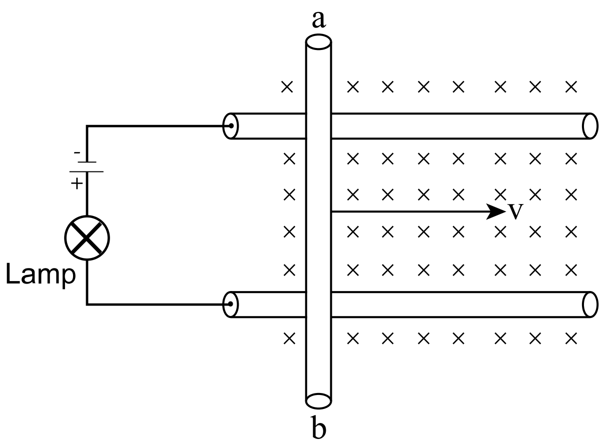
22



The figure represents four rectangular coils of different cross - sectional areas, their number of turns and areas are labelled, all coils rotate with the same angular velocity around an axis normal to the direction of the magnetic field (B). the ascending arrangement of the coils according to the maximum value of the induced e.m.f is ....

- d → a → c → b
- a → d → b → c
- b → c → a → d
- c → b → a → d

23



In the figure, as the rod (ab) moves to right as shown, so the brightness of the lamp................

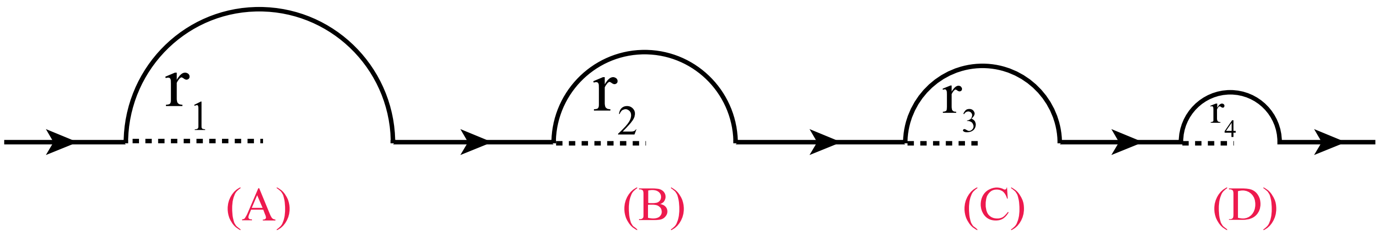
- **Increases**
- **Decreases**
- **Does not change**
- **Vanishes**

24

In the hot wire ammeter, the wire is mounted on a metal plate of the same expansion coefficient. this is to ....

- **avoid the zero error**
- **Increase the expansion of the wire**
- **decrease the efficiency of the device**
- **return the point back quickly to zero position as current is turned off**

25



The figure illustrates a wire in the form of semicircles connected together,and connected to a cell.

which of these semicircles has the least magnetic flux density?

- **A**
- **B**
- **c**
- **d**

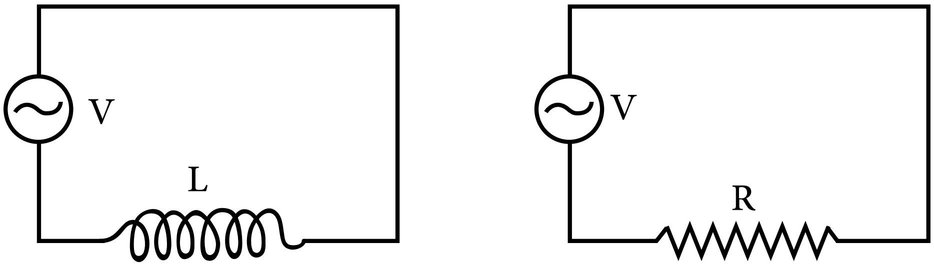
26

Two copper wires of same length, the cross sectional area of the second wire is three times as that of the first wire.

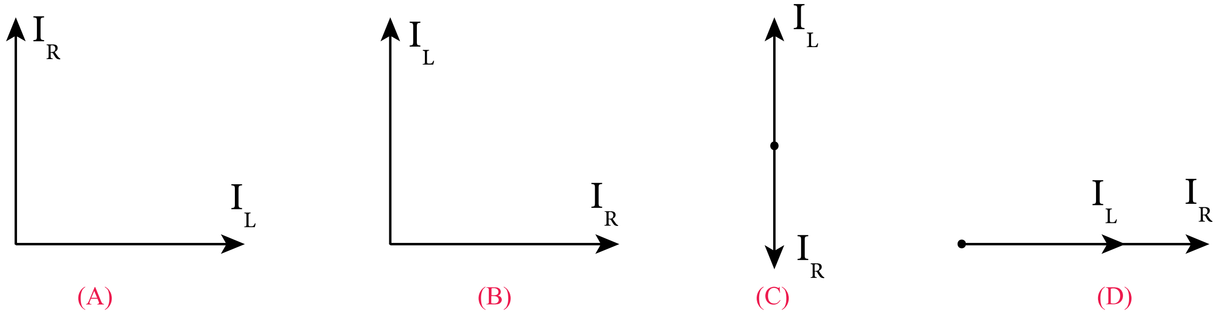
So, the ratio between the resistance of the first wire to the resistance of the second wire ($\frac{R_1}{R_2}$) equals ....

- $\frac{3}{1}$
- $\frac{1}{3}$
- $\frac{6}{1}$
- $\frac{1}{6}$

27

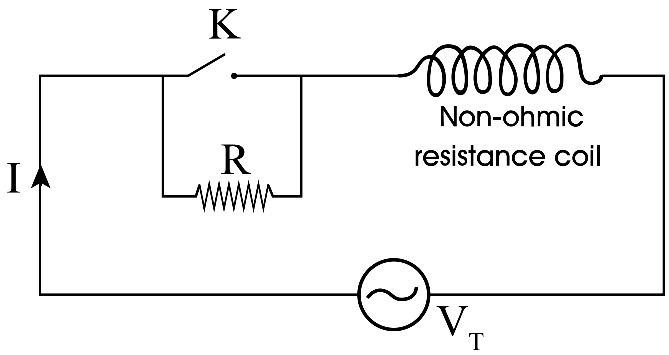


The figure illustrates two AC circuits, one contains an ohmic resistance (R) while the other contains an inductive coil (L) of negligible ohmic resistance. assuming that the voltages of the two sources in the same phase, so the diagram below that represents the phase difference between the currents I_R and I_L is..........



- **A**
- **B**
- **C**
- **D**

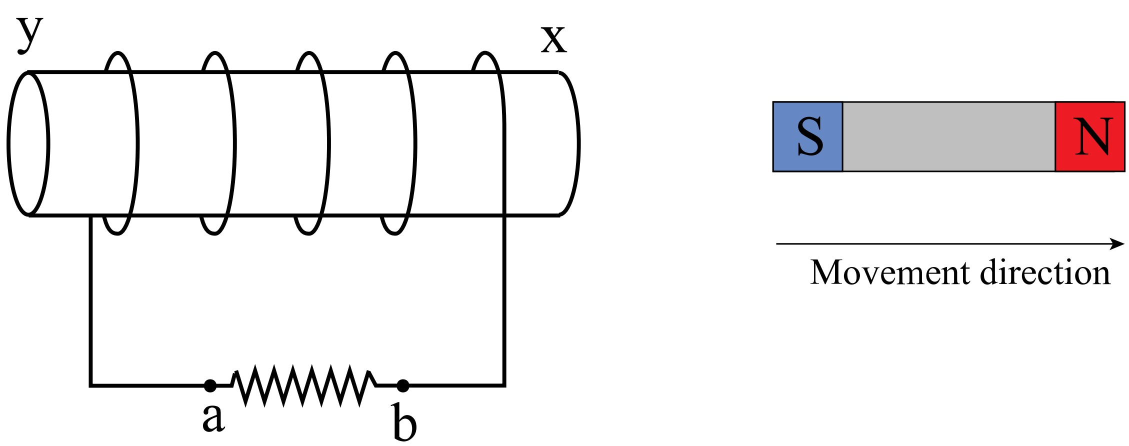
28



In the opposite figure, as the switch (k) is closed. the phase angle between (V_T) and (I) will............

- **Increases**
- **Decreases**
- **Doesn't change**
- **equal zero**

29

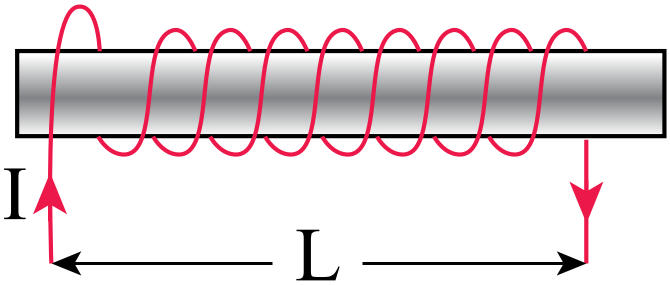


In the figure, as the magnet moves in the direction shown,

Which of these choices is correct?

- **End (x) of the coil acts as north pole and point (b) has positive potential**
- **End (y) of the coil acts as north pole and point (a) has negative potential**
- **End (x) of the coil acts as south pole and point (a) has positive potential**
- **End (y) of the coil acts as south pole and point (b) has negative potential**

30



The figure illustrate a solenoid of length (L) and cross - sectional area (A),

its number of turns is (N), through which a current (I) passes,

if its turns are displaced apart so that its length increases to (3L),

so the magnetic flux density along its axis ....

- **Decreases to** $\frac{1}{3}$ **of its value**
- **Decreases to** $\frac{1}{9}$ **of its value**
- **Decreases to** $\frac{1}{6}$ **of its value**
- **Decreases to** $\frac{1}{12}$ **of its value**