L1-BET-20Oct2021-Teams6-7

24 September 2021 12:00

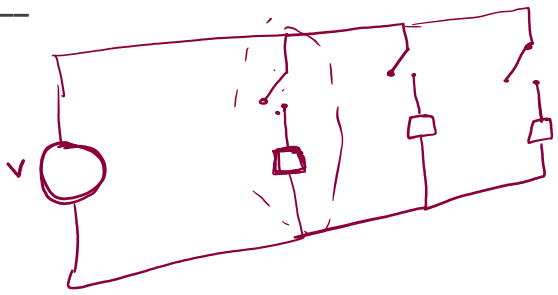
The domestic electrical installations are connected in _____

A) 3-Phase Star

B) 3-Phase Delta

C) Parallel (Single-Phase) ✓

D) Series (Single-Phase)



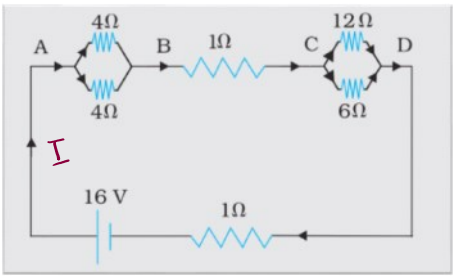
A network of resistors is connected to a 16 V battery with internal resistance of 1 Ω, as shown below. The voltage drop V_{CD} is ____

a) 4 V

b) 2 V

c) 8 V ✓

d) 16 V



$V_{CD} = I * R_{CD}$

$I = \frac{16}{R_{Total}}$

$I = \frac{16}{(4\|4)+1+(12\|6)+1}$

$V_{CD} = 2 * (12\|6)$

$= 2 * 4 = 8V$

$I = \frac{16}{2+1+4+1} = 2A$

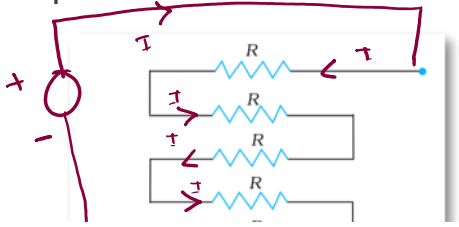
In the circuit shown, the equivalent resistance of the network is _____

A) R/5 Ω

B) 5R Ω ✓

C) 6R/5 Ω

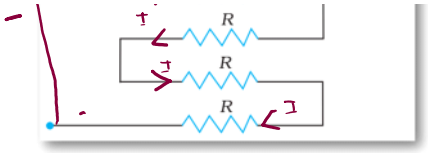
D) 2R Ω



$R_{Total} = R+R+R+R+R = 5R$

C) 6R/5 Ω

D) 2R Ω



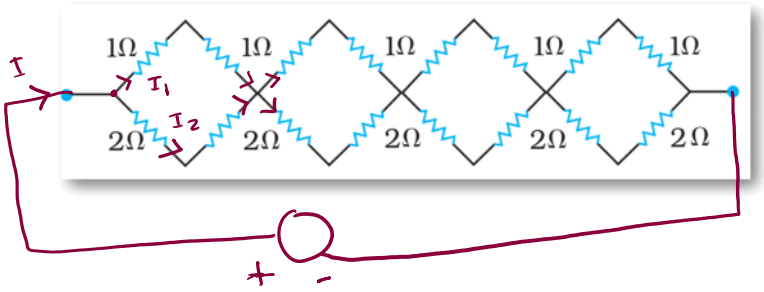
The equivalent resistance of the network shown is _____

A) 15 Ω

B) 10/3 Ω

C) 16/3 Ω ✓

D) 15/3 Ω



$R_{Total} = 4 * \left((1+1) \,||\, (2+2) \right)$

$= 4 * (2 \,||\, 4)$

$= 4 * \frac{4}{3}$

$= \frac{16}{3}$

Two electric bulbs have filaments of same thickness. When connected to the same source, one of them consumes 60 W and other one consumes 100 W. Then

a) 60 W lamp filament has shorter length

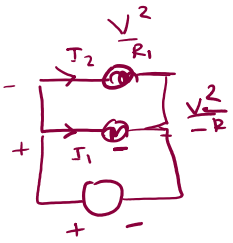
b) 100 W lamp filament has longer length

c) 60 W lamp filament has longer length ✓

d) Both have equal length

$R_1 = \rho \frac{l_1}{A}$

$R_2 = \rho \frac{l_2}{A}$



$P = \frac{V^2}{R}$ $\quad P \propto \frac{1}{R}$

Since, 100 W > 60 W, So 100 W R < 60 W R
and R $\propto$ l
$\therefore$ 60 W $\rightarrow$ longer length