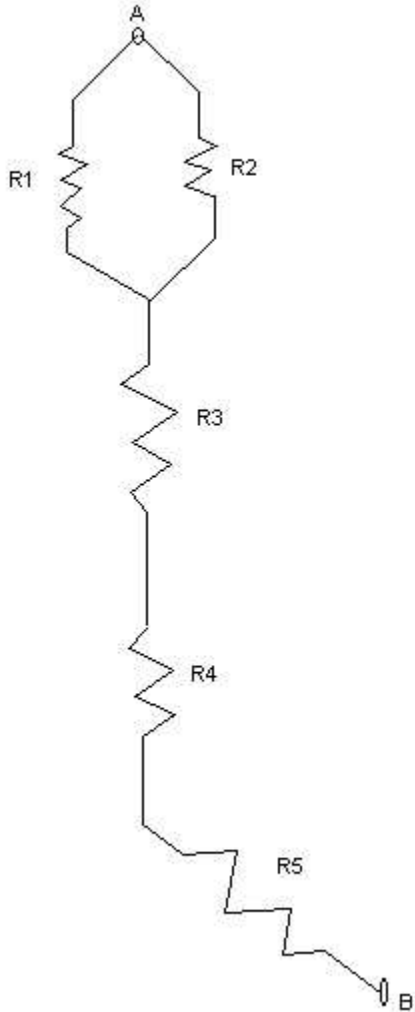


ANSWER TO CRACK PROBLEM 55

The given circuit can be simplified as,



Now, A divides the circular face into two parts $3a\pi/2$ and $a\pi/2$

Also, resistance/unit length = λ

Therefore, $R1 = 3a\pi\lambda/2$

And $R2 = a\pi\lambda/2$

But $R1$ and $R2$ are in parallel circuit.

Therefore, net resistance between $R1$ and $R2$ is = $3a\pi\lambda/8$

Now, this net resistance is in series with the resistance $R3$ and $R4$ and $R5$.

$$R3 = n\lambda$$

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$$R_4 = m\lambda$$

$$R_5 = l\lambda$$

Now, net resistance between **R1** and **R2**, **R3**, **R4** and **R5** are in series.

Therefore, net resistance between **A** and **B** is = $[\lambda\{1 + m + n + 3a\pi/8\}]$

*In this case, the resistance of both hands and one leg will not be included in the circuit as they do not form the path of current between A and B.

By:

Name: Ankul Garg

Class: XI

School: Bal Bharati Public School, Rohini

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