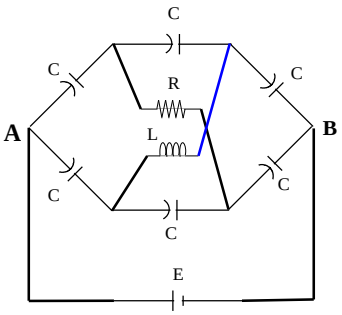
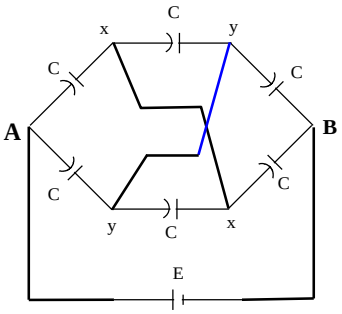
What is the capacitance between points A and B under steady state? The black colour wires lie on the plane of the screen. The blue colour wire lies above the plane of the screen.

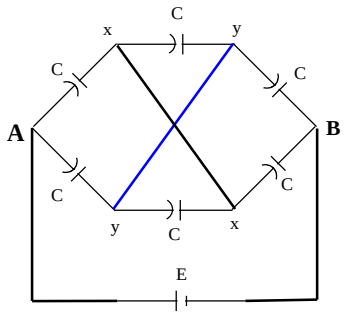


Solution

Under steady-state no current flows through both R and L and both of these will act just like wires. So, the circuit can be redrawn as,



Or,



Note: Blue wire is not cutting any other wire as it is on a different plane.

There are two capacitors across x & y whose equivalent capacitance would be 2C.

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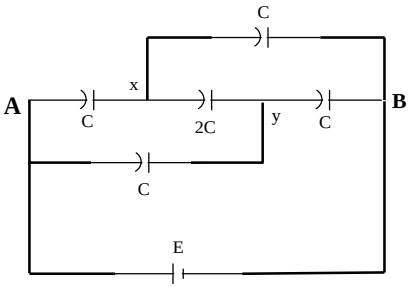
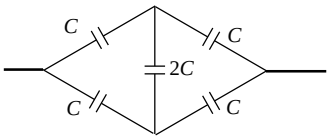
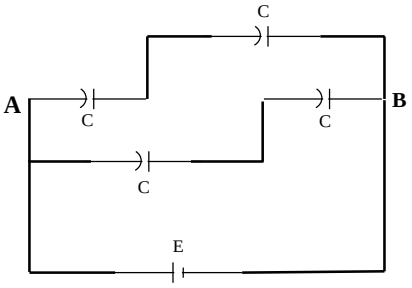


Which across A & B is same as,



Due to symmetry the capacitor 2C won't be charged and can be cut. The detailed proof of such situation is available in the capacitors topic in study material.



Above case is a direct application of series and parallel combination.

Answer: C