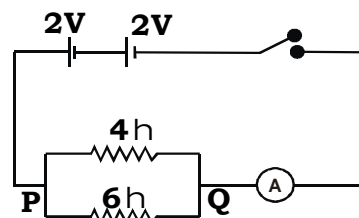


Current Electricity, Household Circuits (Numericals)
Assignment Sheet

1. With reference of the diagram calculate :
- the equivalent resistance between P and Q,
 - the reading of the ammeter,
 - the electrical power between P and Q.

[ICSE 2003]



2. An electric kettle is rated 2.5kW, 250V. Find the cost of running the kettle for 2 hours at 60 paise per unit.

[ICSE 2003]

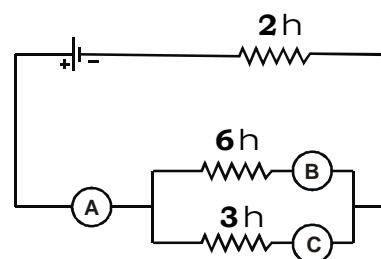
3. Four resistances of 2Ω each are joined end to end to form a square ABCD. Calculate the equivalent resistance of the combination between any two adjacent corner.

[ICSE 2005]

4. In the figure given, A, B and C are three ammeters. The ammeter B reads 0.5A. (All the ammeters have negligible resistance.) Calculate:

- the reading in the ammeters A and C,
- the total resistance of the circuit.

[ICSE 2005]



5. An electric appliance is rated 1500W, 250V. This appliance is connected to 250V mains. Calculate :

- the current drawn
- the electric energy consumed in 60 hours
- the cost of electrical energy consumed at Rs. 2.50 per kWh.

[ICSE 2005]

6. Find the cost of operating an electric toaster for 2 hours if it draws 8A current on a 110 volt circuit. The cost of electrical energy is Rs. 2.50 per kWh.

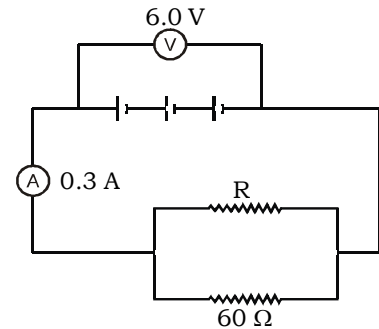
[ICSE 2006]

7. A wire of uniform thickness with a resistance of 27Ω is cut into three equal pieces and they are joined in parallel. Find the resistance of the parallel combination.

[ICSE 2006]

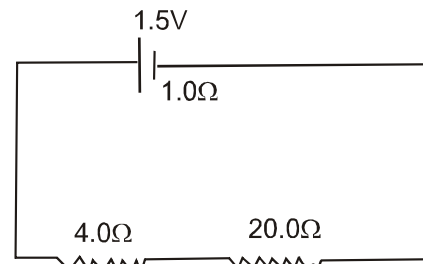
8. In the adjacent figure, the ammeter A reads 0.3A, calculate:
 (i) the total resistance of the circuit.
 (ii) the value of R.
 (iii) the current flowing through R.

[ICSE 2007]



9. A cell of emf 1.5V and internal resistance 1.0 Ω is connected to two resistors of 4.0 Ω & 20.0 Ω in series as shown in the figure. Calculate the :
 (i) current in the circuit,
 (ii) potential difference across the 4.0Ω resistor,
 (iii) voltage drop when the current is flowing,
 (iv) potential difference across the cell.

[ICSE 2007]

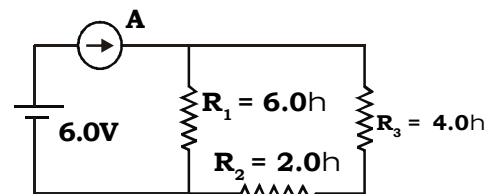


10. Calculate the value of the resistance which must be connected to a 15Ω to provide a total resistance of 6Ω.

[ICSE 2007]

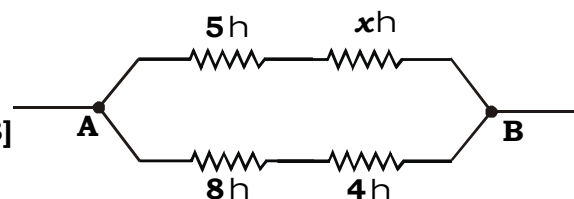
11. Three resistors of 6.0 Ω, 2.0 Ω and 4.0 Ω respectively are joined together as shown in the figure. The resistors are connected to an ammeter and to a cell of emf 6.0V. Calculate :

- (i) The effective resistance of the circuit.
 (ii) The current drawn from the cell.



[ICSE 2008]

12. The equivalent resistance of the following circuit diagram is 4 Ω. Calculate the value of x.



13. An electric heater is rated 4 kW, 220V. Find the cost of using this heater for 12 hours if one kWh of electrical energy costs Rs.3.25.

[ICSE 2008]

14. An electric heat is rated 1000W - 200 V. Calculate :

- (a) the resistance of the heating element
 (b) the current flowing through it.

[ICSE 2009]

15. Calculate the electric energy consumed when a bulb of 40W is used for 12.5 hours everyday for 30 days.

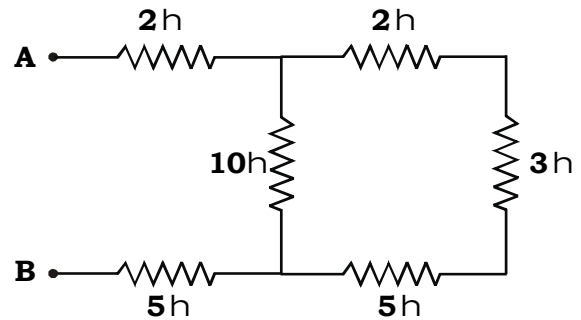
[ICSE 2009]

16. Calculate the quantity of heat that will be produced in a coil of resistance 75 Ω if a current of 2 A is passed through it for 2 minutes.

[ICSE 2010]

17. Six resistors are connected together as shown in the figure. Calculate the equivalent resistance between the points A and B.

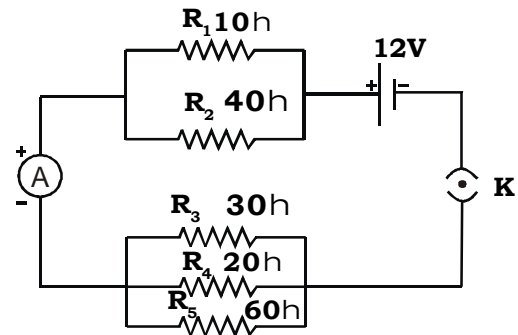
[ICSE 2010]



18. Five resistors of different resistances are connected together as shown in the figure. A 12 V battery is connected to the arrangement. Calculate :

- (i) the total resistance in the circuit.
- (ii) the total current flowing in the circuit.

[ICSE 2010]



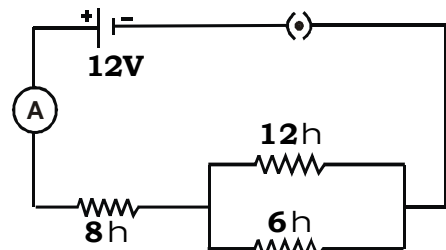
19. (i) An electric bulb is marked 100 W, 250 V. What information does this convey ?
 (ii) How much current will the bulb draw if connected to a 250 V supply?

[ICSE 2011]

20. Three resistors are connected to a 12 V battery as shown in the figure :

- (i) What is the current through the 8 ohm resistor ?
- (ii) What is the potential difference across the parallel combination of 6 ohm and 12 ohm resistor ?
- (iii) What is the current through the 6ohm resistor ?

[ICSE 2011]

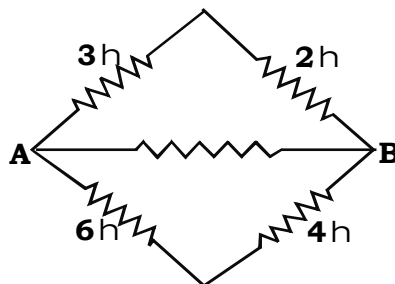


21. Two bulbs are marked 100W, 220V, and 60 W, 110V. Calculate the ratio of their resistances.

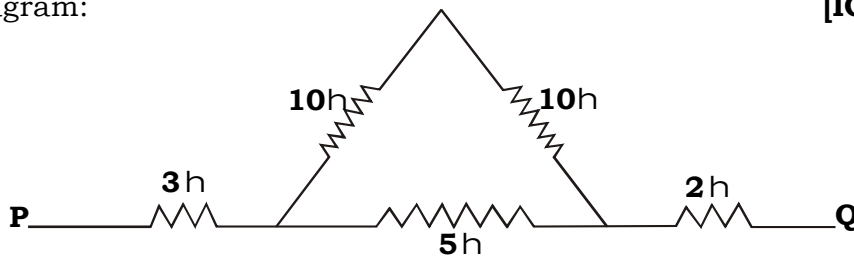
[ICSE 2011]

22. Calculate the equivalent resistance between A and B from the following diagram:

[ICSE 2011]



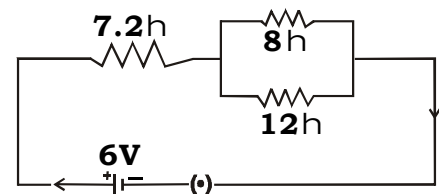
23. Calculate the equivalent resistance between P and Q from the following diagram: [ICSE 2012]



24. An electrical appliance is rated at 1000 KW, 220V. If the appliance is operated for 2 hours, calculate the energy consumed by the appliance in:
 (i) kWh (ii) joule [ICSE 2012]

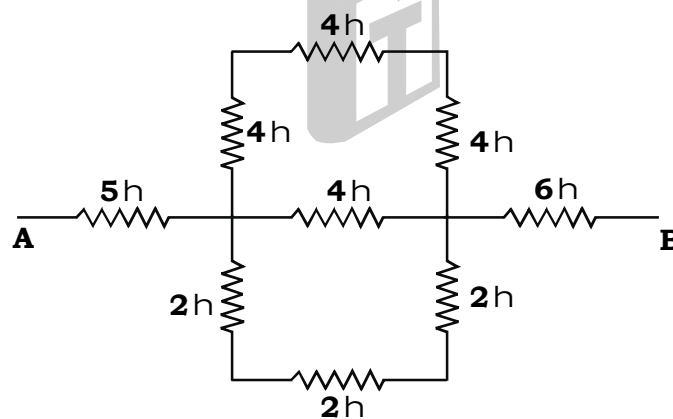
25. Three resistors are connected to a 6 V battery as shown in the figure :
 Calculate :

- (i) the equivalent resistance of the circuit.
 (ii) total current in the circuit.
 (iii) potential difference across the 7.2 Ω resistor.

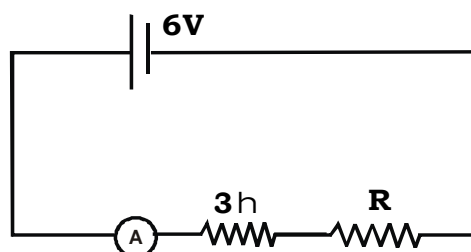


[ICSE 2012]

26. Calculate the equivalent resistance between point A and B for following combination. [ICSE 2013]

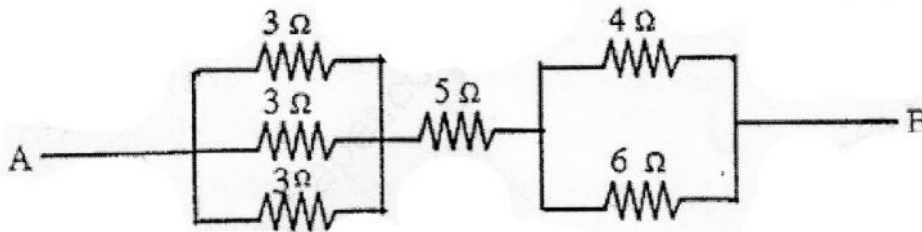


27. When the circuit is switched on, an ammeter reads 0.5A.
 (i) Calculate the value of unknown resistor R.
 (ii) Calculate the charge passing through 3Ω resistor in 120sec.
 (iii) Calculate the power dissipated in 3Ω resistor. [ICSE 2013]



28. A metal wire of resistance 6Ω is stretched so that its length is increased to twice its original length. Calculate its new resistance. **[ICSE 2013]**

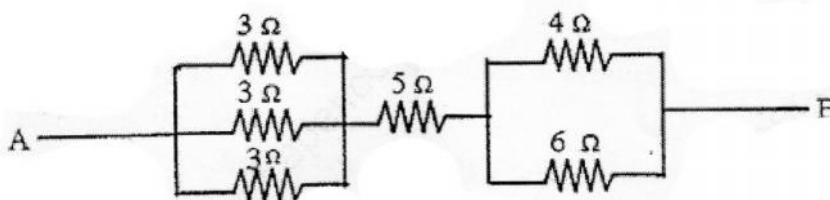
29. Find the equivalent resistance between points A and B **[ICSE 2014]**



30. Two resistors of 4Ω and 6Ω are connected in parallel to a cell to draw $0.5A$ current from the cell.

- (i) Draw a labelled circuit diagram showing the above arrangement.
- (ii) Calculate the current in each resistor. **[ICSE 2014]**

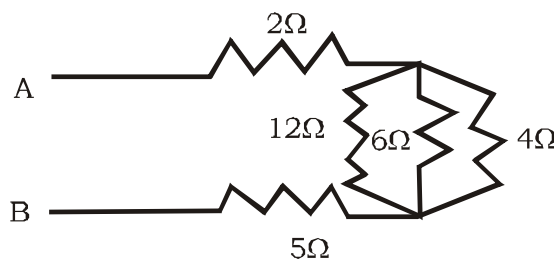
31. Find the equivalent resistance between points A and B. **[ICSE 2014]**



32. Two resistors of 4Ω and 6Ω are connected in parallel to a cell to draw $0.5A$ current from the cell.

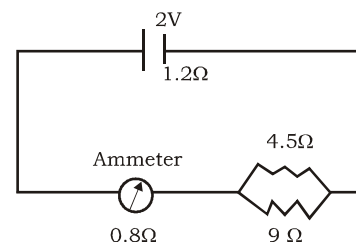
- (i) Draw a labelled circuit diagram showing the above arrangement.
- (ii) Calculate the current in each resistor. **[ICSE 2014]**

33. Find the equivalent resistance between points A and B. **[ICSE 2015]**



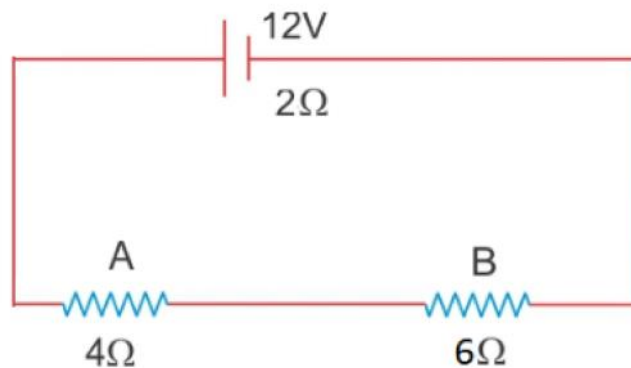
34. A cell of e.m.f. $2V$ and internal resistance 1.2Ω is connected with an ammeter of resistance 0.8Ω and two resistors of 4.5Ω and 9Ω as shown in the diagram below :

- (i) What would be the reading on the Ammeter?
- (ii) What is the potential difference across the terminals of the cell?



[ICSE 2015]

35. The music system draws a current of 400 mA when connected to a 12 V battery.
- What is the resistance of the music system?
 - The music system is left playing for several hours and finally the battery voltage drops to 320 mA and the music system stops playing when the current.
- [ICSE 2016]**
36. Calculate the quantity of heat produced in a $20\ \Omega$ resistor carrying 2.5 A current in 5 minutes.
- [ICSE 2016]**
37. A battery of emf 12 V and internal resistance $2\ \Omega$ is connected with two resistors A and B of resistance $4\ \Omega$ and $6\ \Omega$ respectively joined in series.



Find:

- Current in the circuit
 - The terminal voltage of the cell.
 - The potential difference across $6\ \Omega$ Resistor.
 - Electrical energy spent per minute in $4\ \Omega$ resistor.
- [ICSE 2016]**
38. An electric bulb of resistance 5000, draws a current of 0.4A. Calculate the power of the bulb and the potential difference at its end.
- [ICSE 2017]**

