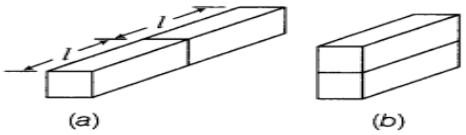
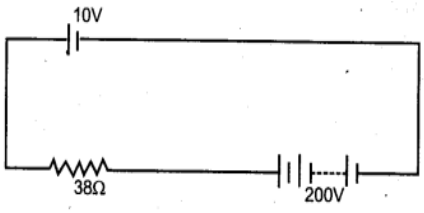
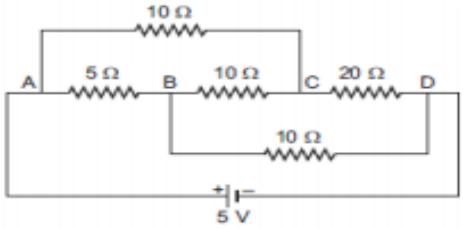
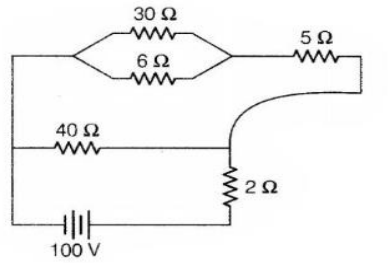
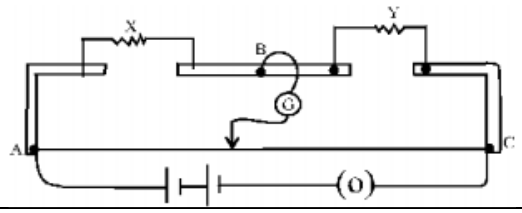
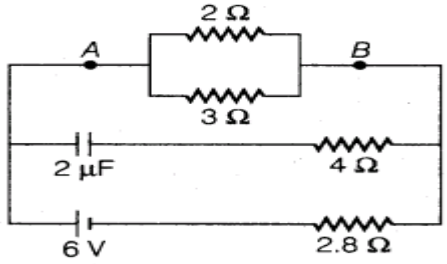
INDIAN SCHOOL DARSAIT
DEPARTMENT OF PHYSICS

Subject : Physics	Topic : Current Electricity	Date of Worksheet : 2.5.19
Resource Person: Susan Anil		Worksheet #3
Name of the Student :_____	Class & Division : XII____	Roll Number : __

1.	(i) The emf of a cell is always greater than its terminal voltage. Why? (**2013**) (ii) State the condition under which the terminal potential difference across a battery and its emf are equal.	1
2.	Two conducting wires X and Y of same diameter but different materials are joined in series across a battery. If number density of electrons in X is twice that in Y, find the ratio of drift velocity of electrons in the two wires. (**2010**)	1
3.	Two identical slabs, of a given metal, are joined together, in different ways, as shown in the figure. What is the ratio of the resistances of these combinations?**(2010**)  	1
4.	A 10V battery of negligible internal resistance is connected across a 200V battery and a resistance of 38Ω as shown in figure. Find the value of current in the circuit. (**2013**)  	1
5.	Two wires of equal length, one of copper and the other of manganin have the same resistance. Which wire is thicker? (**2012)**	1
6.	Write the mathematical relation between mobility and drift velocity of charge carriers in a conductor. Name the mobile charge carriers responsible for conduction of electric current in (i) an electrolyte (ii) an ionized gas. (**2006**)	2
7.	(i) Illustrate failures of Ohm's law with examples. (ii) State Kirchhoff's laws.	2
8.	A cylindrical metallic wire is stretched to increase its length by 5%. Calculate the percentage change in its resistance. (**2007**)	2
9.	A battery of emf 10V and internal resistance 3Ω is connected to a resistor. If the current in the circuit is 0.5A, find the (i) resistance of the resistor, (ii) terminal voltage of the battery. (**2012**)	2

10.	Calculate the value of the current drawn from a 5 V battery in the circuit as shown. 	
11.	A 100V battery is connected to the electric network is shown in the figure. If the power consumed in the 2Ω resistor is 200W, determine the power dissipated in the 5Ω resistor. (**2014**) 	3
12.	Two cells of emf 1.5V and 2V and internal resistance 1ohm and 2ohm respectively are connected in parallel to pass a current in the same direction through an external resistance of 5ohm. Draw the circuit diagram and using Kirchhoff's laws, calculate current through each branch of the circuit and potential difference across 5ohm resistor. (**2005**)	3
13.	A potentiometer wire of length 1m has a resistance of 10ohm. It is connected to a 6V battery in series with a resistance of 5ohm. Determine the emf of the primary cell which gives the balance point at 40cm. (**2014**)	3
14.	The given figure shows the experimental set up of a metre bridge. The null point is found to be 60cm away from the end A with X and Y in position as shown. When a resistance of 15Ω is connected in series with 'Y', the null point is found to shift by 10cm towards the end A of the wire. Find the position of null point if a resistance of 30Ω were connected in parallel with 'Y'. 	3
15.	Calculate the steady current through 2Ω resistor in the circuit shown. (**2010**) 	3