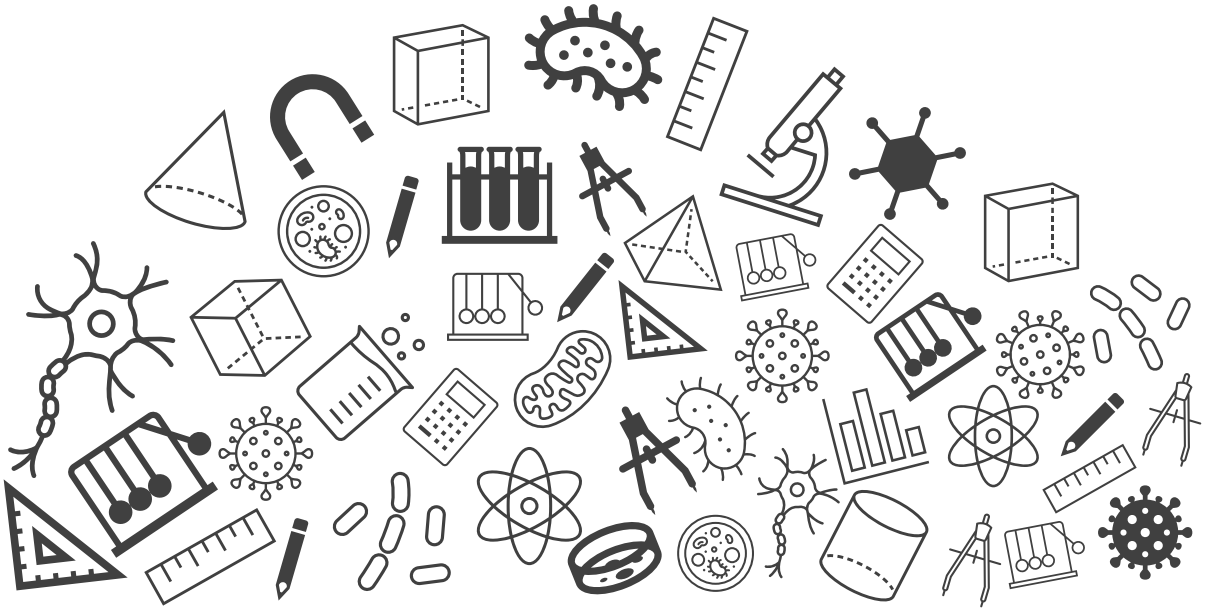
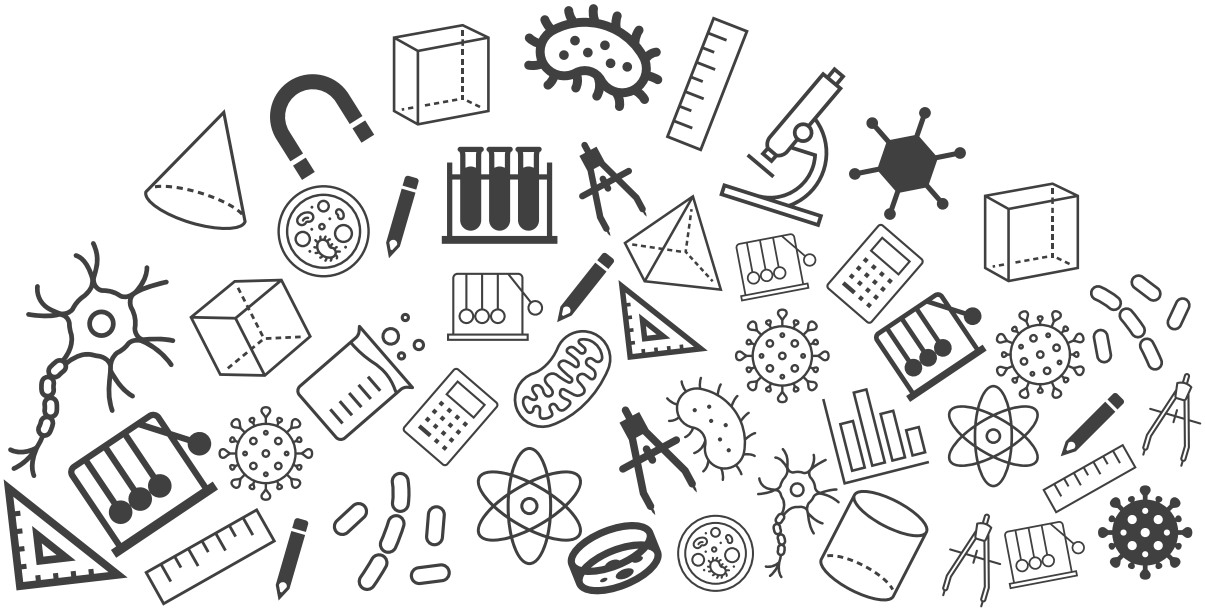
Grade 08 : Science
Exam Important Questions



Chemical Effects of Electric Current



Chemical Effects of Electric Current: Additional Practice

Topic : Exam important questions

1. Which of the following device would you prefer to detect minute flow of current through an electrolyte?

   ✗ **A.** Bulb

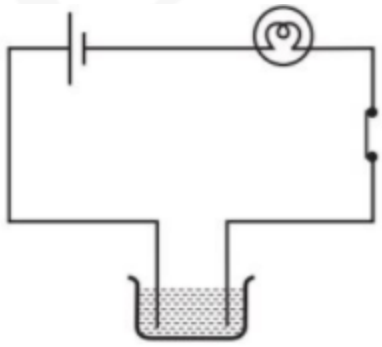
   ✗ **B.** Compass needle

   ✗ **C.** Tester

   ✓ **D.** Light emitting diode

   LED (Light-emitting diode) requires the least amount of current. Hence, it can be used to detect even smaller values of current.

2. The bulb in the circuit does not glow when pure water is used as solution. Which of the following can be added to water to make the bulb glow?



   ✗ **A.** Sand

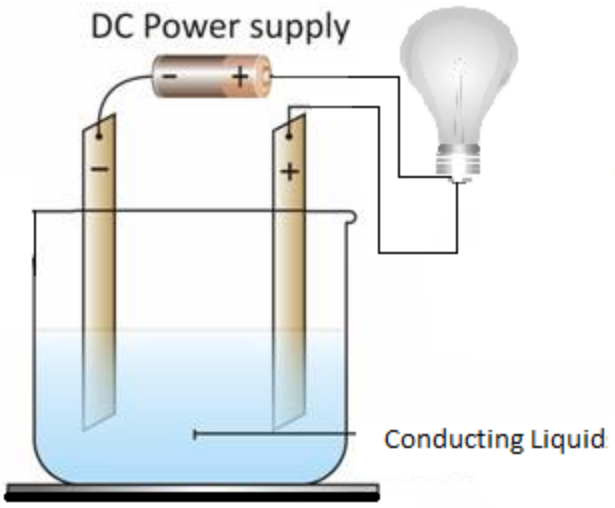
   ✗ **B.** Sugar

   ✗ **C.** Honey

   ✓ **D.** Salt

   Pure water is an insulator but when we dissolve salt into it, the salt dissociates into ions. Now current can flow through this circuit. Apart from salt, all the other options cannot dissociate into ions.

Chemical Effects of Electric Current: Additional Practice

3. 

In the given figure, the bulb connected to the circuit does not glows. What might be the possible reason for this, assuming circuit connections are done properly?

- **A.** The current through the circuit is too less for the bulb's filament to be heated and glowed adequately.
- **B.** The current is too high in the circuit to magnetize the bulb.
- **C.** The current through the circuit is too weak for the chemical reaction required for the bulb to glow.
- **D.** (a) and (b) above.

When sufficient amount of current is made to pass through the filament of a bulb, it gets heated up and glows. Here the current passing through the circuit is too less. Hence, the filament does not heats up and bulb does not glows even though the liquid present in the beaker is conductive.

Chemical Effects of Electric Current: Additional Practice

4. Why don't we get electrocuted everytime we touch an electric switch, but get a shock when it is wet?

- ✗ **A.** Water has free electrons.
- ✗ **B.** Water provides extra insulation.
- ✓ **C.** Water increases conduction.
- ✗ **D.** Water decreases conduction.

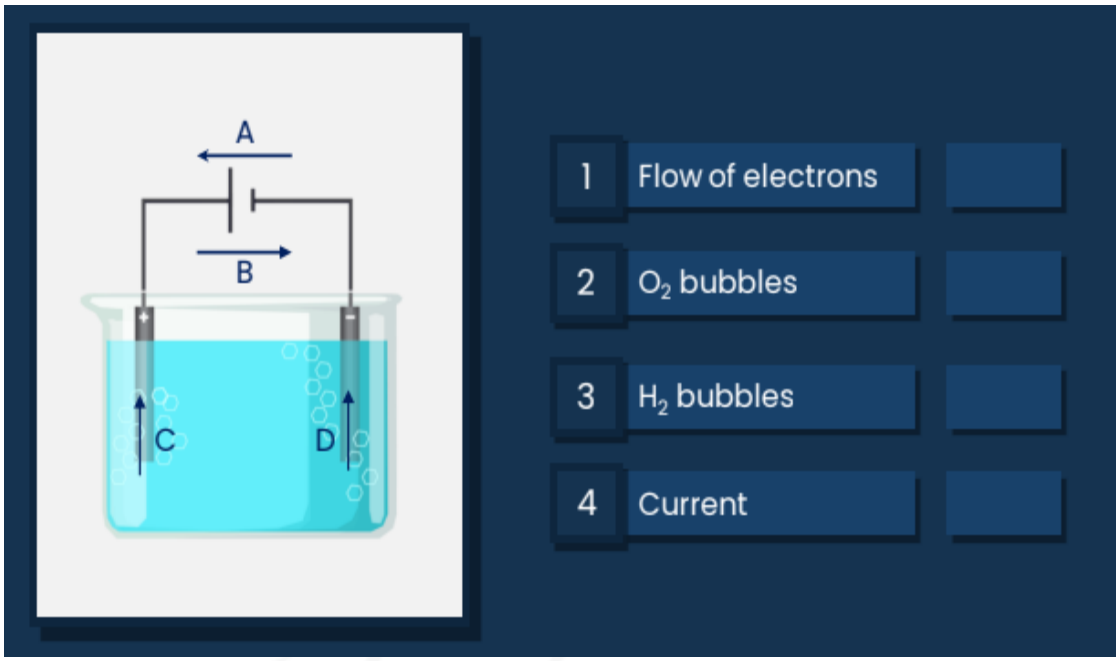
A switch is made of insulator e.g. bakelite.

If a switch is wet, it has a layer of water over it. As normal water has minerals and ions dissolved in it, it can conduct electricity fairly.

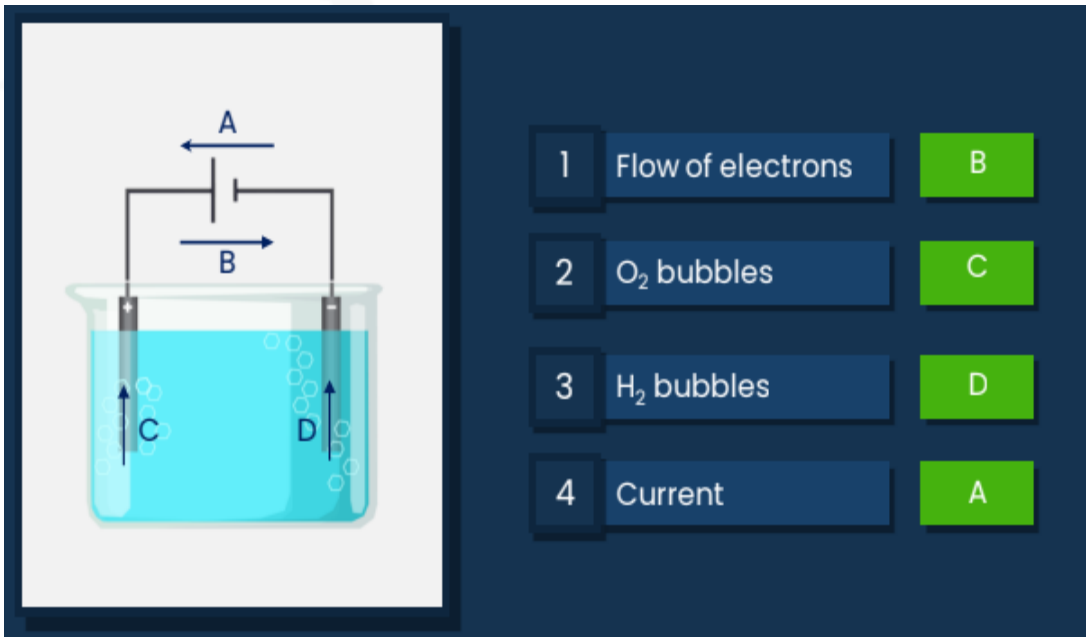
So, touching a wet switch might give a shock.

Chemical Effects of Electric Current: Additional Practice

5. Figure shows the electrolysis of seawater. Match the following labels.



[2 marks]



[2 marks (0.5 marks for each part)]

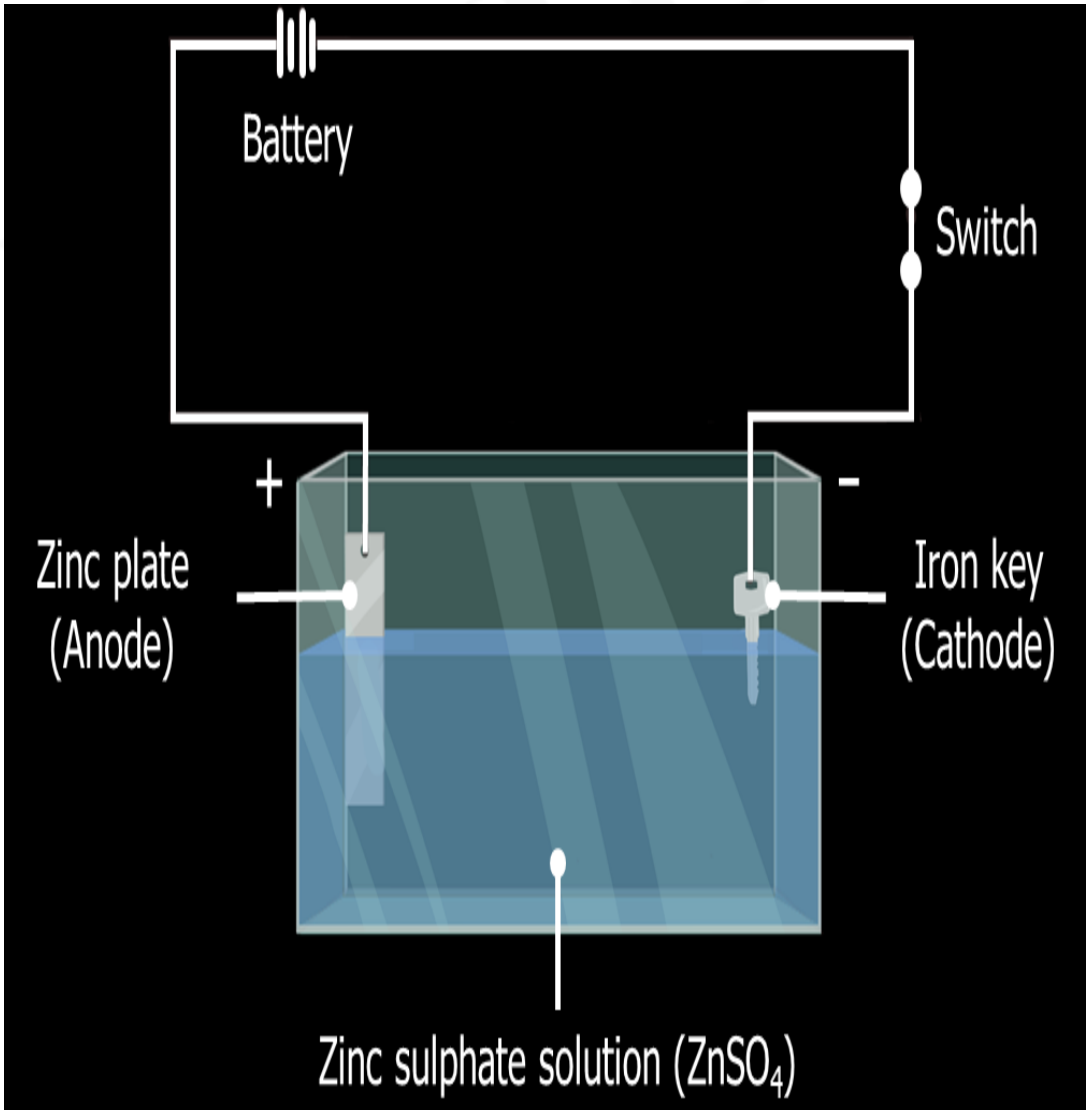
Chemical Effects of Electric Current: Additional Practice

6. Explain the process of coating zinc on an iron key. Draw the circuit diagram.

In electroplating, first of all, two electrodes are connected with a battery and inserted in an electrolyte which is a salt solution of the metal to be deposited. The electrolyte used here is zinc sulphate solution.

Among the two electrodes, the metal to be electroplated is made the cathode (here Iron), while the metal which has to be deposited on this metal is taken as the anode (here zinc).

The zinc sulphate solution consists of zinc and sulphate ions. When electricity is passed, the zinc ions move towards the negative electrode (i.e iron key, here) and get deposited on it forming a thin layer of zinc on it. From the other electrode, a zinc plate, an equal amount of zinc gets dissolved in the solution. Thus, the loss of zinc from the solution is restored and the process continues.



Chemical Effects of Electric Current: Additional Practice

7. Give reasons for the following.

A. For testing conductivity of liquids using a tester circuit, a battery is preferred over a cell.
B. In case of a fire, before the firemen use the water hoses, they shut off the main electrical supply of the area.
C. It is unsafe for electricians to carry out electrical repairs outdoors during heavy downpour.
D. Iron, which is used in bridges, is electroplated with zinc.
[4 marks]

Solution:
(A) A battery gives greater power and will produce measurable current with liquids, which usually are not as good conductors as metals. Liquids are, in general, poor conductors than metals, and with a cell, they might produce weak currents to light up a bulb or LED. So, instead of a cell, a battery is used.
[1 mark]

(B) Water may conduct electricity. If the electrical supply for the area is not shut off and water is poured over electrical appliances, the electricity may pass through the water and harm the firemen. That is why, in case of a fire, the firemen shut off the main electrical supply for the area before they use the water hoses.
[1 mark]

(C) It is very risky and unsafe for the electrician to carry out electrical repairs outdoors during a heavy downpour because rainwater contains dissolved salts. Therefore, rainwater can conduct electricity. The electrician may get electrical shocks while working outdoors during rain.
[1 mark]

(D) It is very risky and unsafe for the electrician to carry out electrical repairs outdoors during a heavy downpour because rainwater contains dissolved salts. Therefore, rainwater can conduct electricity. The electrician may get electrical shocks while working outdoors during rain.
[1 mark]

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8. Write a short note on testers. [2 marks]

A tester is a piece of electrical equipment used to check the presence of electric current. It can be used to check if a material is a good or bad conductor of electricity. (1 mark)
It is usually a conductor with a led/bulb to indicate that the current is present in the circuit. (1 mark)

9. Fill in the blanks.

(a) Most liquids that conduct electricity are solutions of _____, _____ and _____.

(b) The passage of an electric current through a solution causes _____ effects.

(c) If you pass current through copper sulphate solution, copper gets deposited on the plate connected to the _____ terminal of the battery.

(d) The process of depositing a layer of any desired metal on another material by means of electricity is called _____.

(a) Most liquids that conduct electricity are solutions of **acids**, **bases** and **salts**.
(b) The passage of an electric current through a solution causes **chemical** effects.
(c) If you pass current through copper sulphate solution, copper gets deposited on the plate connected to the **negative** terminal of the battery.
(d) The process of depositing a layer of any desired metal on another material by means of electricity is called **electroplating**.

10. Is it safe for the electrician to carry out electrical repairs outdoors during heavy downpours? Explain.

Rainwater is a conductor of electricity as it contains dissolved salts and impurities. So, it is not safe to repair electrical appliances outdoors during a heavy downpour because rainwater can conduct electricity and the electrician can get an electric shock while working.