

Chemical Effects of Electric Current

1. In the given figure, electrolyte, anode and cathode respectively are



- (a) A, B and C (b) B, A and C (c) B, C and A (d) A, C and B
- **2.** In which of the following will the bulb glow?



- In which one of the following situations does a conventional electric current flow due north?(a) Protons in a beam are moving due south.
 - (b) A water molecule is moving due north.
 - (c) Electrons in a beam are moving due south.
 - (d) None of these
- **4.** The diagram shows a beaker containing a solution of zinc sulphate and two carbon electrodes. A battery is placed next to it. In order that the electrode P be plated with zinc,



- (a) P must be connected to S and Q to R
- (b) P must be connected to Q and S to R
- (c) P must be connected to R and Q to S
- (d) P and Q must be connected to R.
- **5.** In the experiment, if A is plated with copper, the anode would be



- (a) A (b) B (c) C (d) Data insufficient
- **6.** When electricity is passed through calcium nitrate solution in water, what is likely to be formed at the cathode and why?

(a) Hydrogen because it is a very reactive than calcium

(b) Calcium because it is a very reactive than hydrogen

(c) Hydrogen because it is less reactive than calcium

(d) Calcium because it is less reactive than hydrogen.

- An electric current is passed through a conducting solution. Following are the some observations:
 (i) Deposits of metal may be seen on electrodes
 (ii) Solution may get heated
 (iii) Bubbles of gas may be formed on the electrodes
 - (a) Only (ii) is true.
 - (b) Only (i) and (ii) are true.
 - (c) Only (i) and (iii) are true.
 - (d) All (i), (ii) and (iii) are true.
- 8. In the given figure, the filter paper contains starch soaked in potassium iodide solution is connected to the battery as shown. When we write on the wet paper, it has a blue black colour.



(i) Iodine is formed at the anode.

(ii) Iodine turns blue black in the presence of

starch.

(a) Only (i) is correct. (b) Only (ii) is correct.

- (c) Both (i) and (ii) are correct.
- (d) Neither (i) nor (ii) is correct.
- 9. Which of the following statements is incorrect? (a) Anode is an electrode connected to the positive terminal of the battery.
 - (b) Pure water is poor conductor of electricity.

(c) Electrolysis is used in the refining of impure metals.

(d) Ions can have only a positive charge.

10. Which of the following is correct?

(a) Water can be used for extinguishing fires caused due to electrical faults.

(b) Carbon is a non-metal so it cannot be used in electrolytic cell.

(c) A liquid conducts electricity because of the presence of ions.

(d) Pure water forms ions to conduct electricity.

- 11. Which of the following cells use(s) electric current to produce a chemical reaction?
 - (a) Dry cell
 - (b) Solar cell
 - (c) Electrolytic cell
 - (d) Both dry cell and electrolytic cell
- 12. Electrolysis of a solution of sodium chloride produces

(a) Hydrogen gas at anode and chlorine at cathode

(b) Hydrogen gas at cathode, chlorine at anode and sodium hydroxide

(c) Hydrogen gas at anode and sodium hydroxide at cathode

(d) Chlorine gas at anode and sodium hydroxide at cathode.

- 13. Adding common salt to distilled water makes it
 - (a) Good conductor (b) Insulator

(c) Can't say (d) None of these

14. Why is the switch for any electrical appliance in ac circuit always connected to the live wire? (a) No current flows in the neutral wire.

> (b) There will be a short circuit if the switch is in the Earth lead.

> (c) The device can be switched off easily if the switch is in the neutral lead.

(d) The device can be isolated (mode safe) if the switch is in the live lead.

To protect iron from corrosion and rust, it is 15. coated with (a) Tin (b) Copper (c) Mercury (d) Zinc.

Achievers Section (HOTS)

16. There are two different solutions in set up P and Q as shown in figure. The bulb in the set up P glows more brightly as compared to that of the set up Q. What are the possible causes for this?



(i) The connections of the circuit Q may be loose. (ii) The liquid in Q may have small conductivity. (iii) Liquid in P is equivalent to a battery while liquid in Q is equivalent to a cell of the battery of liquid P.

a) Only (i) and (ii)	(b) Only (ii) and (iii)
c) Only (i)	(d) Only (ii)

Direction (O. No. 17 and 18): Four substances were tested for their electrical conductivity. The results are shown in the table. Study the table and answer the following questions.

Substance	Bulb	Substance at Cathode	Substance at Anode	
Р	Lights up	Aluminium	Oxygen	
Q	Lights up	Nothing	Nothing	
R	Does not light up	Nothing	Nothing	
S	Lights up	Hydrogen	Carbon dioxide	

17. In substance Q, bulb lights up but no substance is found either at cathode or at anode, why? (a) Because Q is non-electrolyte.

> (b) Because Q is an element which remains unchanged when it conducts electricity.

> (c) Because Q is an electrolyte that conducts electricity when it is in the molten state.

(d) Because Q is a poor conductor of electricity.

- 18. Which solutions could be alumina and magnesium nitrate respectively?(a) P and Q
 - (b) R and Q
 - (c) P and S

(d) \boldsymbol{P} is the alumina but no one is magnesium nitrate.

19. The bumpers and door handles of motor cars, taps etc. are coated with silvery layer of chromium because

(i) It does not easily get corroded.

(ii) It forms a hard layer which does not easily get scratched.

(iii) It tarnishes quickly.

(iv) It is cheap.

Which of the following options is correctly identifies true (T) or false (F)?

	(i)	(ii)	(iii)	(iv)
(a)	F	F	Т	Т
(b)	Т	Т	F	F

(c)	F	Т	F	Т
(d)	Т	Т	F	Т

20. The diagram shows a plotting compass placed above a copper wire when there is no current flowing in the wire. What happens to the compass needle when a large direct current flows from point A to point B?



(a) The compass needle points towards the right.

- (b) The compass needle points towards the left.
- (c) The compass needle points towards upward.(d) The compass needle points toward downward.

Answer key									
1.	В	2.	D	3.	С	4.	С	5.	В
6.	С	7.	D	8.	С	9.	D	10.	С
11.	С	12.	В	13.	A	14.	D	15.	D
16.	В	17.	В	18.	D	19.	D	20.	D

HINTS & EXPLANATIONS

- 1. (b): The electrode connected to the positive terminal of the cell is anode and the electrode connected to the negative terminal of the cell is cathode. The solutions of some substances dissolved in water that conduct electricity are known as electrolytes.
- **2.** (d): Many acids, bases and salts dissolved in water are electrolytes.
- **3.** (c) Not Available
- **4.** (c): Zinc sulphate is the salt that forms hydrogen at the cathode. As electrode P be plated with zinc, the electrode P is the anode and P must be connected to R, a positive terminal of the battery and Q is the cathode and must be connected to S.
- **5.** (b): As electrode A is plated with copper then A must be a cathode. Hence B would be anode.
- **6.** (c): Calcium is a very reactive metal.
- 7. (d) Not Available
- **8.** (c): Brown iodine turns blue black in the presence of starch. This shows that iodine is formed at the anode.
- **9.** (d): Ions can have negative and positive chargers.
- **10.** (c) Not Available
- **11.** (c): Dry cell uses chemical reaction to produce electric current.
- **12.** (b) Not Available
- **13.** (a): When impurities like salts are dissolved in water, they dissociate to form ions. Hence, it becomes a good conductor of electricity.
- **14.** (d): The purpose of electric switch is to make and break the circuit as per our requirements. So it should be connected to the live wire. If the switch is in the neutral lead, the device can never be switched off.
- **15.** (d): The coating of zinc on iron prevents it from corrosion and rusting.

- **16.** (b): Both liquids conduct electricity. In figure both the circuits are tightly connected as bulbs glow. Reasons are given in (ii) and (iii).
- **17.** (b): Q must be silver, copper, mercury and other metals.
- **18.** (d): When electricity is passed through molten alumina during electrolysis, the alumina splits up into its elements aluminium and oxygen. In the electrolysis of magnesium nitrate, oxygen is formed at anode and hydrogen is formed at cathode.
- **19.** (d) Not Available
- **20.** (d): A current-carrying wire will produce circular magnetic field around the wire. The direction of the magnetic field follows the right hand grip rule. When the current flows from A to B, the magnetic field around the wire is shown in the figure.



Since the compass is placed in front of the wire, it will follow the direction of the magnetic field and turn to the right.