

**Faraday's law of electrolysis**

26. Faraday's laws of electrolysis will fail when  
 (a) Temperature is increased  
 (b) Inert electrodes are used  
 (c) A mixture of electrolytes is used  
 (d) In none of these cases
27. According to the first law of Faraday, the weight of a substance discharge at the electrode is  
 (a)  $W = ZQ$  (b)  $W = eF$   
 (c)  $W = \frac{Z}{F}It$  (d)  $W = ZI$
28. When 0.04 faraday of electricity is passed through a solution of  $CaSO_4$ , then the weight of  $Ca^{2+}$  metal deposited at the cathode is  
 (a) 0.2 gm (b) 0.4 gm  
 (c) 0.6 gm (d) 0.8 gm
29. A current 2.0 A is passed for 5 hours through a molten metal salt deposits 22 g of metal (At. wt. =177). The oxidation state of the metal in the metal salt is  
 (a) + 1 (b) + 2  
 (c) + 3 (d) + 4
30. How many atoms of calcium will be deposited from a solution of  $CaCl_2$  by a current of 25 milliamperes flowing for 60 seconds  
 (a)  $4.68 \times 10^{18}$  (b)  $4.68 \times 10^{15}$   
 (c)  $4.68 \times 10^{12}$  (d)  $4.68 \times 10^9$
31. On passing 0.5 faraday of electricity through  $NaCl$ , the amount of  $Cl$  deposited on cathode is  
 (a) 35.5 gm (b) 17.75 gm  
 (c) 71 gm (d) 142 gm
32. What is the amount of chlorine evolved when 2 amperes of current is passed for 30 minutes in an aqueous solution of  $NaCl$   
 (a) 66 g (b) 1.32 g  
 (c) 33 g (d) 99 g
33. On passing a current through  $KCl$  solution, 19.5g of potassium is deposited. If the same quantity of electricity is passed through a solution of aluminium chloride, the amount of aluminium deposited is  
 (a) 4.5 g (b) 9.0 g  
 (c) 13.5 g (d) 27 g  
 (e) None is correct
34. Electrolysis rules of Faraday's states that mass deposited on electrode is proportional to  
 (a)  $m \propto I^2$   
 (b)  $m \propto Q$



- (c)  $m \propto Q^2$   
(d) None of these
35. A current being passed for two hour through a solution of an acid liberating 11.2 litre of oxygen at NTP at anode. What will be the amount of copper deposited at the cathode by the same current when passed through a solution of copper sulphate for the same time  
(a) 16 g (b) 63 g  
(c) 31.5 g (d) 8 g
36. In a metal oxide, there is 20% oxygen by weight. Its equivalent weight is  
(a) 40 (b) 64  
(c) 72 (d) 32
37. On the basis of the information available from the reaction  $\frac{4}{3}Al + O_2 \rightarrow \frac{2}{3}Al_2O_3$ ,  $\Delta G = -827 kJ mol^{-1}$  of  $O_2$ , the minimum *emf* required to carry out an electrolysis of  $Al_2O_3$  is ( $F = 96500 C mol^{-1}$ )  
(a) 8.56 V (b) 2.14 V  
(c) 4.28 V (d) 6.42 V
38. Then during electrolysis of a solution of  $AgNO_3$ , 9650 coulombs of charge pass through the electroplating bath, the mass of silver deposited in the cathode will be  
(a) 1.08 g (b) 10.8 g  
(c) 21.6 g (d) 108 g
39. Total charge on 1 mole of a monovalent metal ion is equal to  
(a)  $9.65 \times 10^4 Coulomb$   
(b)  $6.28 \times 10^{18} Coulomb$   
(c)  $1.6 \times 10^{-19} Coulomb$   
(d) None of these
40. When an electric current is passed through acidulated water 112 ml of hydrogen gas at N.T.P. collect at the cathode in 965 seconds. The current passed, in amperes is  
(a) 1.0 (b) 0.5  
(c) 0.1 (d) 2.0
41. How much chlorine will be liberated on passing one ampere current for 30 minutes through NaCl solution  
(a) 0.66 mole (b) 0.33 mole  
(c) 0.66 gm (d) 0.33 gm
42. The number of electrons involved in redox reactions when a Faraday of electricity is passed through an electrolyte in solution is  
(a)  $6 \times 10^{23}$  (b)  $6 \times 10^{-23}$   
(c) 96500 (d)  $8 \times 10^{19}$



43. Coulomb is equal to  
(a) *ampere*  $\times$  *second*  
(b) *ampere*  $\times$  *minute*  
(c) *watt*  $\times$  *second*  
(d) *volt*  $\times$  *second*
44. The energy required to release 1 electron from  $He^+$  is...  
(a) + 54.4 eV  
(b) - 13.6 eV  
(c) + 27.2 eV  
(d) Cannot be predicted
45. Faraday's laws of electrolysis are related to the  
(a) Atomic number of cation  
(b) Atomic number of anion  
(c) Equivalent weight of the electrolyte  
(d) Speed of the cation
46. The electric charge for electrode decomposition of one gram equivalent of a substance is  
(a) One ampere per second  
(b) 96500 coulombs per second  
(c) One ampere for one hour  
(d) Charge on one mole of electrons
47. The number of electrons passing per second through a cross-section of copper wire carrying  $10^{-6}$  amperes of current per second is found to be  
(a)  $1.6 \times 10^{-19}$  (b)  $6 \times 10^{-35}$  (c)  $6 \times 10^{-16}$  (d)  $6 \times 10^{12}$
48. The electrolytic cells, one containing acidified ferrous chloride and another acidified ferric chloride are connected in series. The ratio of iron deposited at cathodes in the two cells when electricity is passed through the cells will be  
(a) 3 : 1 (b) 2 : 1  
(c) 1 : 1 (d) 3 : 2
49. When 96500 coulomb of electricity is passed through a copper sulphate solution, the amount of copper deposited will be  
(a) 0.25 mol (b) 0.50 mol  
(c) 1.00 mol (d) 2.00 mol
50. During electrolysis of fused aluminium chloride 0.9gm of aluminium was deposited on the cathode. The volume of chlorine liberated at the anode will be  
(a) 2.24 litres (b) 11.2 litres  
(c) 1.12 litres (d) 5.6 litres

