9. Same quantity of electricity was passed through solutions of salts of elements A, B and C with atomic weights 7, 27 and 48 respectively. The masses of A, B and C deposited were 2·1 g, 2·7 g and 7·2 g respectively. The valencies of A, B and C respectively are

(*a*) 3, 2 and 1 (*b*) 1, 2 and 3
(*c*) 1, 3 and 2 (*d*) 2, 3 and 2

10. $Al_2O_3$ is reduced by electrolysis at low potentials and high currents. If $4{\cdot}0 \times 10^4$ amperes of current is passed through molten $Al_2O_3$ for 6 hours, what mass of aluminium is produced ? (Assume 100% current efficiency. At. mass of Al = 27 g $mol^{-1}$)

(*a*) $8{\cdot}1 \times 10^4$ g (*b*) $2{\cdot}4 \times 10^5$ g
(*c*) $1{\cdot}3 \times 10^4$ g (*d*) $9{\cdot}0 \times 10^3$ g

11. When 0·1 mol $MnO_4^{2-}$ is oxidized, the quantity of electricity required to completely oxidize $MnO_4^{2-}$ to $MnO_4^-$ is

(*a*) 96500 C (*b*) 2 × 96500 C
(*c*) 9650 C (*d*) 96·50 C

(AIPMT 2014)

12. The weight of silver (at. wt. = 108) displaced by a quantity of electricity which displaces 5600 mL of $O_2$ at STP will be

(*a*) 5·4 g (*b*) 10·8 g
(*c*) 54·0 g (*d*) 108·0 g

(AIPMT 2014)

13. During the electrolysis of molten sodium chloride, the time required to produce 0·10 mol of chlorine gas using a current of 3 amperes is

(*a*) 55 minutes (*b*) 110 minutes
(*c*) 220 minutes (*d*) 330 minutes

(NEET Phase II 2016)

14. The number of electrons delivered at the cathode during electrolysis by a current of 1 amphere in 60 seconds is (charge on the electron = $1{\cdot}60 \times 10^{-19}$ C)

(*a*) $6 \times 10^{23}$ (*b*) $6 \times 10^{20}$
(*c*) $3{\cdot}75 \times 10^{20}$ (*d*) $7{\cdot}48 \times 10^{23}$

(NEET Phase II 2016)

## II. Conductance and specific, equivalent and molar conductivities

15. The resistance of a 0·10 M weak acid HA in a conductivity cell is $2{\cdot}0 \times 10^3$ ohm. The cell constant of the cell is 0·78 $cm^{-1}$ and $\wedge_0$ of the acid is 390 S $cm^2$ $mol^{-1}$.

Consider the following statements :

1. pH of the acid solution = 3
2. $pK_a$ of the acid = 5
3. Degree of dissociation of the acid = 0·01

Which of the statements given above are correct ?

(*a*) 1 and 2 only (*b*) 1 and 3 only
(*c*) 2 and 3 only (*d*) 1, 2 and 3

(IAS Prelim 2010)

16. An increase in equivalent conductance of a strong electrolyte with dilution is mainly due to

(*a*) Increase in number of ions
(*b*) Increase in ionic mobility of ions
(*c*) 100% ionisation of electrolyte at normal dilution
(*d*) Increase in both, *i.e.*, number of ions and ionic mobility of ions

(AIPMT Prelim 2010 ; AIIMS 2014)

17. The sequence of ionic mobility in the aqueous solution is

(*a*) $K^+ > Na^+ > Rb^+ > Cs^+$
(*b*) $Cs^+ > Rb^+ > K^+ > Na^+$
(*c*) $Rb^+ > K^+ > Cs^+ > Na^+$
(*d*) $Na^+ > K^+ > Rb^+ > Cs^+$ (AIPMT 2008)

18. The equivalent conductance of NaCl at concentration C and at infinite dilution are $\lambda_c$ and $\lambda_\infty$ respectively. The correct relationship between $\lambda_c$ and $\lambda_\infty$ is given by (where the constant B is positive)

(*a*) $\lambda_c = \lambda_\infty + (B)\sqrt{C}$ (*b*) $\lambda_c = \lambda_\infty + (B)\,C$
(*c*) $\lambda_c = \lambda_\infty - (B)\,C$ (*d*) $\lambda_c = \lambda_\infty - (B)\sqrt{C}$

(JEE Main 2014)

19. Resistance of 0·2 M solution of an electrolyte is 50 Ω. The specific conductance of the solution is 1·4 S $m^{-1}$. The resistance of 0·5 M solution of the same electrolyte is 280 Ω. The molar conductivity of 0·5 M solution of the electrolyte in S $m^2$ $mol^{-1}$ is

(*a*) $5 \times 10^2$ (*b*) $5 \times 10^{-4}$
(*c*) $5 \times 10^{-3}$ (*d*) $5 \times 10^3$

(JEE Main 2014)

20. The molar conductivity of a 0·5 mol/$dm^3$ solution of $AgNO_3$ with electrolytic conductivity of $5{\cdot}76 \times 10^{-3}$ S $cm^{-1}$ at 298 K is

(*a*) 2·88 S $cm^2$/mol (*b*) 11·52 S $cm^2$/mol
(*c*) 0·086 S $cm^2$/mol (*d*) 28·8 S $cm^2$/mol