1) How much current should be passed through an electrochemical cell to deposit 0.5 gm of gold on cathode in 1 hour. Faraday constant = 96500 coulomb / mole, atomic weight of gold = 197 gm /mole, valency of gold = 3.   [March, 2003]
(Ans: 0.2 A)

2) The electrochemical equivalent of silver is 11.18×10^{-7} kg /coulomb and its atomic mass is 108. The atomic mass of gold is 197 and its valency is 3 Find the electrochemical equivalent of gold.   [October, 1998]
(Ans: 6.80×10^{-7} kg / coulomb)

3) A heater rod is placed in a water tub connected with 230 volt mains. 10 litre of water is to be heated from $20° C$ to $80° C$ temperature within 10 minutes. What would be the value of electric current used ?   [October, 1997]
(Ans: 18.3 A)

4) Two electric bulbs having resistances 10 Ω and 20 Ω are connected in series with 24 volt battery. Which bulb will give more light ?   [March, 1997]
(Ans: bulb having resistance 20 Ω)

5) The emf of a storage cell is 2.1 volt and its internal resistance is 0.05 ohm. The cell is connected to a dc source of 120 volt. What will be the current flowing through it when it is charged ?   [October, 1996]
(Ans: 2358 A)

6) A battery of 2 V emf has internal resistance of 2 Ω. It is connected in series to a source of 210 V and a resistance of 102 Ω. How much charging current will be found in it ?
(Ans: 2.0 A)   [March, 1996]

7) 20 litre of water is to be heated from $30 ° C$ to $80 ° C$ in 20 minutes using heater having thermal efficiency 90 %. Find power rating of the heater and current through it at 250 volt.
(J = 4.2 joule / calorie)   (Ans: 3.9 Kw, 15.6 A)

8) A light bulb is rated 100 W at 220 V. Find (a) the current in the bulb, (b) the resistance of the bulb, (c) the electrical energy consumed by the bulb in one hour and (d) heat in calorie produced in the bulb in one hour.
[Ans: (a) 5 / 11 A, (b) 484 Ω, (c) 100 watt-hour, (d) 86400 cal.]

9) An electric kettle has two coils. With one of them water in the kettle boils in 12 minutes, while with the other it boils in 24 minutes. In how many minutes will the water boil if both the coils are connected in (a) series, (b) parallel ?
[Ans: (a) 36 minutes, (b) 8 minutes]

10) Three equal resistors connected in series across a source of emf together dissipate 10 watt of power. What would be the power dissipated if the same resistors are connected in parallel across the same source of emf ?   (Ans: 90 W)

11) A current of 4 A is passed through resistance of R Ω immersed in water at $20 ° C$. Ice is continuously added to water to maintain the temperature. 18.5 gm of ice was needed in 15 minutes. Calculate the value of R.
(Ans: 0.54 Ω)
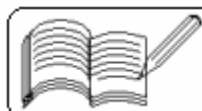
12) A current of 10 A is passed through a copper voltameter containing $CuSO_4$ solution. If the area of cathode surface is 1 sq. m, find the average increase in the thickness of copper deposit per minute.
(E.C.E. of copper = 0.0003294 gm /coulomb. Density of copper = 8.9 gm / cc.)
(Ans: 2.22×10^{-6} cm)

13) A 200 sq. cm metal plate is to be coated with copper by electrolysis. How long will it take to deposit copper 0.2 mm in thickness, if a current of 2 A is used ?
(E.C.E. of copper = 0.0003296 gm / coulomb. Density of copper = 8.9 gm / cc)
(Ans: 15 hour)

14) The emf of lead-iron thermocouple, one junction of which is at $0°C$ is $E = 1784t - 2.4\,t^2$
(μ-volts) where t is in $°C$. Find (a) neutral temperature, (b) inversion temperature and (c) thermoelectric power at $100°C$.
(Ans: (a) $371.7°C$, (b) $743.4°C$, (c) 1.304 mV / $°C$)

15) Emf generated in a thermocouple is given by an expression $e = \alpha t + \beta t^2$. With the reference junction kept at $0°C$, if the emf generated is e = 1 mV, find the temperature of the hot junction.
(Ans: $100°C$)