

JEE MAIN ELECTROCHEMISTRY — CONCEPT OF ΔG AND MAXIMUM WORK DONE BY A GALVANIC CELL — PYQS

Max. Marks: 12

Questions: 3

Section A (MCQ) — 2 questions

Q.1 Given at 298 K :

$$E_{\text{Fe}^{2+}/\text{Fe}}^{\ominus} = X \text{ Volt}$$

$$E_{\text{Fe}^{3+}/\text{Fe}}^{\ominus} = Y \text{ Volt}$$

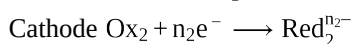
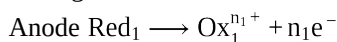
The $E_{\text{Fe}^{3+}/\text{Fe}^{2+}}^{\ominus}$ in Volt at 298 K is given by :

- [JEE Main 2026 (Online) 8th April Evening Shift]
- (1) $2X - 3Y$ (2) $3Y - 2X$
 (3) $3Y + 2X$ (4) $Y + X$

Scan or tap for the full solution



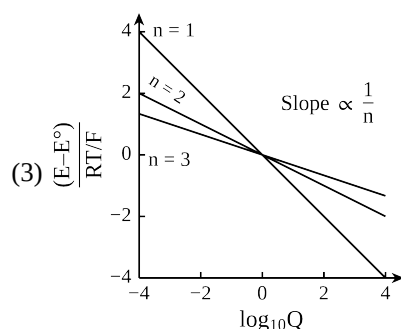
Q.2 For a general redox reaction



Which of the following statement is incorrect?

- [JEE Main 2026 (Online) 6th April Evening Shift]
- (1) The overall reaction can be written as

$$n_2 \text{Red}_1 + n_1 \text{Ox}_2 \rightleftharpoons n_2 \text{Ox}_1^{n_1+} + n_1 \text{Red}_2^{n_2-}$$
- (2) The electrons do not appear in the overall reaction because electrons produced at the anode are consumed at the cathode.

Here n is the number of electrons transferred in redox reaction.

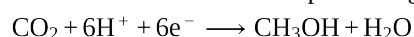
- (4) If the reaction is carried out reversibly, the electrical work done is equal to the ratio of charge and potential difference through which charge is moved.

Scan or tap for the full solution

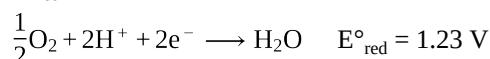


Section B (Numerical) — 1 question

Q.3 Consider the following two half-cell reactions along with the standard reduction potential given :



$$E_{\text{red}}^{\circ} = 0.02 \text{ V}$$



A fuel cell was set up using the above two reactions such that the cell operates under the standard condition of 1 bar pressure and 298 K temperature. The fuel cell works with 80% efficiency. If the work derived from the cell using 1 mol of CH_3OH is used to compress an ideal gas isothermally against a constant pressure of 1 kPa, then the change in the volume of the gas,

$$\Delta V = \text{_____ m}^3. \text{ (nearest integer)}$$

$$\text{Given : } F = 96500 \text{ C mol}^{-1}$$

[JEE Main 2026 (Online) 2nd April Evening Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ) — 2 questions

Ques.	1	2									
Ans.	2	4									

Section B (Numerical) — 1 question

Ques.	3								
Ans.	560								