

CHEMISTRY · JEE MAIN

Redox Reactions

Chapter-wise previous year questions, with answer key

65

PYQS

2020–2025

PAPERS

8

TOPICS

Oxidation States

Balancing Redox Reactions

Applications of Redox

Types of Redox Reactions

Redox in Acidic and Basic Medium

Oxidation Number

Oxidation and Reduction

Balancing Redox Equations

- 1 Attempt each question on paper first — they're grouped by topic, newest papers first.
- 2 Check yourself against the answer key at the end.
- 3 Got one wrong? Tap “Step-by-step solution” under it for the full working.

Stuck on a question?

Every question has a free step-by-step solution on PrepWiser — tap “Step-by-step solution” under it.

Practise this chapter online with instant answer checking: prepwisser.in/learn · No signup needed to browse

Oxidation States · 11 PYQs

Q1 JEE Main 2024 · 1 Feb · Shift 1

The lowest oxidation number of an atom in a compound A_2B is -2 . The number of electrons in its valence shell is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiset.in/questions/ulPx2O9JIQ](https://www.prepwiset.in/questions/ulPx2O9JIQ)

Q2 JEE Main 2024 · 31 Jan · Shift 2

In the reaction of potassium dichromate, potassium chloride and sulfuric acid (conc.), the oxidation state of the chromium in the product is (+) _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiset.in/questions/KWLbWpQmEo](https://www.prepwiset.in/questions/KWLbWpQmEo)

Q3 JEE Main 2023 · 15 Apr · Shift 1

The total change in the oxidation state of manganese involved in the reaction of $KMnO_4$ and potassium iodide in the acidic medium is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiset.in/questions/2rjLEEwnsM](https://www.prepwiset.in/questions/2rjLEEwnsM)

Q4 JEE Main 2023 · 15 Apr · Shift 1

In Chromyl chloride, the oxidation state of chromium is (+) _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiset.in/questions/3sLMPIY5__](https://www.prepwiset.in/questions/3sLMPIY5__)

Q5 JEE Main 2023 · 8 Apr · Shift 2

The sum of oxidation state of the metals in $Fe(CO)_5$, VO^{2+} and WO_3 is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiset.in/questions/DzBbUwhkj_](https://www.prepwiset.in/questions/DzBbUwhkj_)

Q6 JEE Main 2023 · 31 Jan · Shift 2

A sample of a metal oxide has formula $M_{0.83}O_{1.00}$. The metal M can exist in two oxidation states $+2$ and $+3$.

In the sample of $M_{0.83}O_{1.00}$, the percentage of metal ions existing in $+2$ oxidation state is _____ %.
(nearest integer)

Numerical answer — enter the value.

[Step-by-step solution ► prepwiset.in/questions/Mucvx59I-C](https://www.prepwiset.in/questions/Mucvx59I-C)

Q7 JEE Main 2022 · 24 Jun · Shift 2

Manganese (VI) has ability to disproportionate in acidic solution. The difference in oxidation states of two ions it forms in acidic solution is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiset.in/questions/A3ZNwl7rcD](https://www.prepwiset.in/questions/A3ZNwl7rcD)

Q8 JEE Main 2021 · 1 Sep · Shift 2

The sum of oxidation states of two silver ions in $[\text{Ag}(\text{NH}_3)_2][\text{Ag}(\text{CN})_2]$ complex is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/1W-JC8FsBG](https://www.prepwiser.in/questions/1W-JC8FsBG)

Q9 JEE Main 2021 · 27 Jul · Shift 1

The oxidation states of 'P' in $\text{H}_4\text{P}_2\text{O}_7$, $\text{H}_4\text{P}_2\text{O}_5$ and $\text{H}_4\text{P}_2\text{O}_6$, respectively, are :

(A) 7, 5 and 6

(B) 5, 4 and 3

(C) 5, 3 and 4

(D) 6, 4 and 5

[Step-by-step solution ► prepwiser.in/questions/wiyNYwbwLa](https://www.prepwiser.in/questions/wiyNYwbwLa)

Q10 JEE Main 2021 · 25 Jul · Shift 2

Identify the process in which change in the oxidation state is five :

(A) $\text{Cr}_2\text{O}_7^{2-} \rightarrow 2\text{Cr}^{3+}$

(B) $\text{MnO}_4^- \rightarrow \text{Mn}^{2+}$

(C) $\text{CrO}_4^{2-} \rightarrow \text{Cr}^{3+}$

(D) $\text{C}_2\text{O}_4^{2-} \rightarrow 2\text{CO}_2$

[Step-by-step solution ► prepwiser.in/questions/EKabWjnGC4](https://www.prepwiser.in/questions/EKabWjnGC4)

Q11 JEE Main 2020 · 2 Sep · Shift 1

The oxidation states of iron atoms in compounds (A), (B) and (C), respectively, are x, y and z. The sum of x, y and z is _____.

$\text{Na}_4[\text{Fe}(\text{CN})_5(\text{NOS})]$

(A)

$\text{Na}_4[\text{FeO}_4]$

(B)

$[\text{Fe}_2(\text{CO})_9]$

(C)

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/pI5m40dFtv](https://www.prepwiser.in/questions/pI5m40dFtv)

Balancing Redox Reactions · 1 PYQs

Q12 JEE Main 2023 · 8 Apr · Shift 1



What is the value of x ?

(A) 10

(B) 2

(C) 12

(D) 6

[Step-by-step solution ► prepwiser.in/questions/0K7UjiKogP](https://www.prepwiser.in/questions/0K7UjiKogP)

Q13 JEE Main 2024 · 4 Apr · Shift 1

Only 2mL of KMnO_4 solution of unknown molarity is required to reach the end point of a titration of 20mL of oxalic acid (2M) in acidic medium. The molarity of KMnO_4 solution should be _____ M.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/mbM-YWqMp7](https://www.prepwiser.in/questions/mbM-YWqMp7)

Q14 JEE Main 2023 · 8 Apr · Shift 2

Given below are two statements:

Statement I : In redox titration, the indicators used are sensitive to change in pH of the solution.

Statement II : In acid-base titration, the indicators used are sensitive to change in oxidation potential.

In the light of the above statements, choose the most appropriate answer from the options given below

- (A) Both Statement I and Statement II are incorrect
(B) Statement I is correct but Statement II is incorrect
(C) Statement I is incorrect but Statement II is correct
(D) Both Statement I and Statement II are correct

[Step-by-step solution ► prepwiser.in/questions/Ad4Yotd42m](https://www.prepwiser.in/questions/Ad4Yotd42m)

Q15 JEE Main 2023 · 6 Apr · Shift 1

Which of the following options are correct for the reaction



- A. Redox reaction
B. Displacement reaction
C. Decomposition reaction
D. Combination reaction

Choose the correct answer from the options given below:

- (A) A and B only
(B) C and D only
(C) A only
(D) A and D only

[Step-by-step solution ► prepwiser.in/questions/eGejY9_Ev](https://www.prepwiser.in/questions/eGejY9_Ev)

Q16 JEE Main 2023 · 31 Jan · Shift 1

H_2O_2 acts as a reducing agent in :

- (A) $\text{Mn}^{2+} + 2\text{H}_2\text{O}_2 \rightarrow \text{MnO}_2 + 2\text{H}_2\text{O}$
(B) $2\text{Fe}^{2+} + 2\text{H}^+ + \text{H}_2\text{O}_2 \rightarrow 2\text{Fe}^{3+} + 2\text{H}_2\text{O}$
(C) $\text{Na}_2\text{S} + 4\text{H}_2\text{O}_2 \rightarrow \text{Na}_2\text{SO}_4 + 4\text{H}_2\text{O}$
(D) $2\text{NaOCl} + \text{H}_2\text{O}_2 \rightarrow 2\text{NaCl} + \text{H}_2\text{O} + \text{O}_2$

[Step-by-step solution ► prepwiser.in/questions/EFQddP0ps8](https://www.prepwiser.in/questions/EFQddP0ps8)

Q17 JEE Main 2023 · 31 Jan · Shift 1

When Cu^{2+} ion is treated with KI, a white precipitate, X appears in solution. The solution is titrated with sodium thiosulphate, the compound Y is formed. X and Y respectively are :

- | | | |
|-----|------------------------------------|--|
| (A) | $\text{X} = \text{CuI}_2$ | $\text{Y} = \text{Na}_2\text{S}_4\text{O}_6$ |
| (B) | $\text{X} = \text{Cu}_2\text{I}_2$ | $\text{Y} = \text{Na}_2\text{S}_4\text{O}_6$ |
| (C) | $\text{X} = \text{CuI}_2$ | $\text{Y} = \text{Na}_2\text{S}_2\text{O}_3$ |
| (D) | $\text{X} = \text{Cu}_2\text{I}_2$ | $\text{Y} = \text{Na}_2\text{S}_4\text{O}_5$ |

[Step-by-step solution ► prepwiser.in/questions/Y0Npd0BGi8](https://www.prepwiser.in/questions/Y0Npd0BGi8)

Q18 JEE Main 2023 · 30 Jan · Shift 2

KMnO_4 oxidises I^- in acidic and neutral/faintly alkaline solutions, respectively, to :

- (A) IO_3^- & IO_3^-
(B) I_2 & I_2
(C) I_2 & IO_3^-
(D) IO_3^- & I_2

[Step-by-step solution ► prepwiser.in/questions/0WOU7sBAxU](https://www.prepwiser.in/questions/0WOU7sBAxU)

Q19 JEE Main 2022 · 27 Jul · Shift 1

20mL of 0.02 M $\text{K}_2\text{Cr}_2\text{O}_7$ solution is used for the titration of 10mL of Fe^{2+} solution in the acidic medium. The molarity of Fe^{2+} solution is _____ $\times 10^{-2}$ M. (Nearest Integer)

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/4l0G5BXpzP](https://www.prepwiser.in/questions/4l0G5BXpzP)

Q20 JEE Main 2022 · 26 Jul · Shift 2

The products obtained from a reaction of hydrogen peroxide and acidified potassium permanganate are :

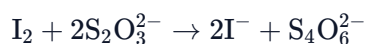
- (A) Mn^{4+} , H_2O only
(B) Mn^{2+} , H_2O only
(C) Mn^{4+} , H_2O , O_2 only
(D) Mn^{2+} , H_2O , O_2 only

[Step-by-step solution ► prepwiser.in/questions/QI0ilBrEyt](https://www.prepwiser.in/questions/QI0ilBrEyt)

Q21 JEE Main 2022 · 26 Jul · Shift 2

20 mL of 0.02 M hypo solution is used for the titration of 10 mL of copper sulphate solution, in the presence of excess of KI using starch as an indicator. The molarity of Cu^{2+} is found to be _____ $\times 10^{-2}$ M. [nearest integer]

Given :



Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/8zpr3o3n46](https://www.prepwiser.in/questions/8zpr3o3n46)

Q22 JEE Main 2022 · 28 Jun · Shift 2

0.01 M KMnO_4 solution was added to 20.0 mL of 0.05 M Mohr's salt solution through a burette. The initial reading of 50 mL burette is zero. The volume of KMnO_4 solution left in the burette after the end point is _____ mL. (nearest integer)

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/IqqjUpWa0Z](https://www.prepwiser.in/questions/IqqjUpWa0Z)

Q23 JEE Main 2021 · 27 Jul · Shift 2

10.0 mL of 0.05 M KMnO_4 solution was consumed in a titration with 10.0 mL of given oxalic acid dihydrate solution. The strength of given oxalic acid solution is _____ $\times 10^{-2}$ g/L.

(Round off to the nearest integer)

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/I_vM1dJ3JD](https://www.prepwiser.in/questions/I_vM1dJ3JD)

Q24 JEE Main 2021 · 25 Jul · Shift 1

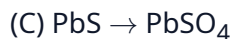
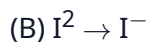
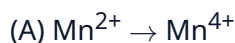
When 10 mL of an aqueous solution of Fe^{2+} ions was titrated in the presence of dil H_2SO_4 using diphenylamine indicator, 15 mL of 0.02 M solution of $\text{K}_2\text{Cr}_2\text{O}_7$ was required to get the end point. The molarity of the solution containing Fe^{2+} ions is $x \times 10^{-2}$ M. The value of x is _____. (Nearest integer)

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/yw3ZFpksHH](https://www.prepwiser.in/questions/yw3ZFpksHH)

Q25 JEE Main 2021 · 18 Mar · Shift 2

In basic medium, H_2O_2 exhibits which of the following reactions?



Choose the most appropriate answer from the options given below :

(A) (B) only

(B) (A), (B) only

(C) (A) only

(D) (A), (C) only

[Step-by-step solution](#) ► [prepwiser.in/questions/_6kxfCFdy4](https://www.prepwiser.in/questions/_6kxfCFdy4)

Types of Redox Reactions · 7 PYQs

Q26 JEE Main 2025 · 22 Jan · Shift 2

The species which does not undergo disproportionation reaction is :



[Step-by-step solution](#) ► [prepwiser.in/questions/H_6_Lhb9nf](https://www.prepwiser.in/questions/H_6_Lhb9nf)

Q27 JEE Main 2024 · 8 Apr · Shift 1

Thiosulphate reacts differently with iodine and bromine in the reactions given below:



Which of the following statement justifies the above dual behaviour of thiosulphate?

(A) Thiosulphate undergoes oxidation by bromine and reduction by iodine in these reactions

(B) Bromine is a weaker oxidant than iodine

(C) Bromine is a stronger oxidant than iodine

(D) Bromine undergoes oxidation and iodine undergoes reduction in these reactions

[Step-by-step solution](#) ► [prepwiser.in/questions/mE5aXPfBKx](https://www.prepwiser.in/questions/mE5aXPfBKx)

Which of the following reactions are disproportionation reactions?



Choose the correct answer from the options given below :

(A) (A), (B)

(B) (A), (D)

(C) (B), (C), (D)

(D) (A), (B), (C)

[Step-by-step solution ► prepwiser.in/questions/SugBBbqtAW](https://www.prepwiser.in/questions/SugBBbqtAW)

Given below are two statements:

Statement I : S_8 solid undergoes disproportionation reaction under alkaline conditions to form S^{2-} and $\text{S}_2\text{O}_3^{2-}$.

Statement II : ClO_4^- can undergo disproportionation reaction under acidic condition.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(A) Statement I is correct but statement II is incorrect

(B) Both statement I and statement II are incorrect

(C) Statement I is incorrect but statement II is correct

(D) Both statement I and statement II are correct

[Step-by-step solution ► prepwiser.in/questions/R010LYGetV](https://www.prepwiser.in/questions/R010LYGetV)

Total number of species from the following which can undergo disproportionation reaction is _____.

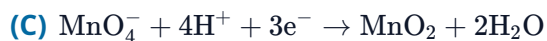


Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/OzAbMJDwwU](https://www.prepwiser.in/questions/OzAbMJDwwU)

Q31 JEE Main 2022 · 26 Jul · Shift 1

Which of the given reactions is not an example of disproportionation reaction?



Step-by-step solution ► [prepwiser.in/questions/jHUn2LS5Jo](https://www.prepwiser.in/questions/jHUn2LS5Jo)

Q32 JEE Main 2021 · 20 Jul · Shift 1

The species given below that does NOT show disproportionation reaction is :



Step-by-step solution ► [prepwiser.in/questions/_e_Oot-bkz](https://www.prepwiser.in/questions/_e_Oot-bkz)

Redox in Acidic and Basic Medium · 14 PYQs

Q33 JEE Main 2024 · 1 Feb · Shift 1

In acidic medium, $\text{K}_2\text{Cr}_2\text{O}_7$ shows oxidising action as represented in the half reaction:



X, Y, Z and A are respectively are :



Step-by-step solution ► [prepwiser.in/questions/VaGiRyYoqX](https://www.prepwiser.in/questions/VaGiRyYoqX)

Q34 JEE Main 2024 · 31 Jan · Shift 2

Number of moles of H^+ ions required by 1mole of MnO_4^- to oxidise oxalate ion to CO_2 is _____.

Numerical answer — enter the value.

Step-by-step solution ► [prepwiser.in/questions/ham-HU4Jso](https://www.prepwiser.in/questions/ham-HU4Jso)

Q35 JEE Main 2024 · 30 Jan · Shift 1



If the above equation is balanced with integer coefficients, the value of z is _____.

Numerical answer — enter the value.

Step-by-step solution ► [prepwiser.in/questions/RhQCuxeobA](https://www.prepwiser.in/questions/RhQCuxeobA)

Q36 JEE Main 2024 · 29 Jan · Shift 1

In alkaline medium, MnO_4^- oxidises I^- to

- (A) I_2 (B) IO_3^-
(C) IO^- (D) IO_4^-

[Step-by-step solution ► prepwiser.in/questions/PUKk9ZuI2d](https://www.prepwiser.in/questions/PUKk9ZuI2d)

Q37 JEE Main 2023 · 10 Apr · Shift 2

In alkaline medium, the reduction of permanganate anion involves a gain of _____ electrons.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/0GVTmaEwZU](https://www.prepwiser.in/questions/0GVTmaEwZU)

Q38 JEE Main 2023 · 6 Apr · Shift 2

During the reaction of permanganate with thiosulphate, the change in oxidation of manganese occurs by value of 3. Identify which of the below medium will favour the reaction.

- (A) aqueous neutral (B) both aqueous acidic and faintly alkaline
(C) both aqueous acidic and neutral (D) aqueous acidic

[Step-by-step solution ► prepwiser.in/questions/GHfV9TSGez](https://www.prepwiser.in/questions/GHfV9TSGez)

Q39 JEE Main 2022 · 27 Jul · Shift 2

In neutral or alkaline solution, MnO_4^- oxidises thiosulphate to :

- (A) $\text{S}_2\text{O}_7^{2-}$ (B) $\text{S}_2\text{O}_8^{2-}$
(C) SO_3^{2-} (D) SO_4^{2-}

[Step-by-step solution ► prepwiser.in/questions/XCO8CErYPY](https://www.prepwiser.in/questions/XCO8CErYPY)

Q40 JEE Main 2022 · 25 Jul · Shift 1

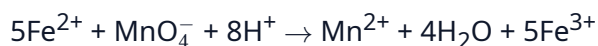
The reaction of H_2O_2 with potassium permanganate in acidic medium leads to the formation of mainly :

- (A) Mn^{2+}
(B) Mn^{4+}
(C) Mn^{3+}
(D) Mn^{6+}

[Step-by-step solution ► prepwiser.in/questions/mSTul5brYZ](https://www.prepwiser.in/questions/mSTul5brYZ)

Q41 JEE Main 2021 · 1 Sep · Shift 2

In the given chemical reaction, colors of the Fe^{2+} and Fe^{3+} ions, are respectively :



- (A) Yellow, Orange (B) Yellow, Green
(C) Green, Orange (D) Green, Yellow

[Step-by-step solution ► prepwiser.in/questions/lhBr8_I1r](https://www.prepwiser.in/questions/lhBr8_I1r)

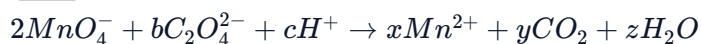
Q42 JEE Main 2021 · 1 Sep · Shift 2

Hydrogen peroxide reacts with iodine in basic medium to give :



[Step-by-step solution ► prepwisser.in/questions/93CydxCYm](https://www.prepwisser.in/questions/93CydxCYm)

Q43 JEE Main 2021 · 16 Mar · Shift 1



If the above equation is balanced with integer coefficients, the value of c is _____. (Round off to the Nearest Integer).

Numerical answer — enter the value.

[Step-by-step solution ► prepwisser.in/questions/nouQUAsozt](https://www.prepwisser.in/questions/nouQUAsozt)

Q44 JEE Main 2021 · 25 Feb · Shift 1

In basic medium CrO_4^{2-} oxidises $\text{S}_2\text{O}_3^{2-}$ to form SO_4^{2-} and itself changes into $\text{Cr}(\text{OH})_4^-$. The volume of 0.154 M CrO_4^{2-} required to react with 40 mL of 0.25 M $\text{S}_2\text{O}_3^{2-}$ is _____ mL. (Rounded off to the nearest integer)

Numerical answer — enter the value.

[Step-by-step solution ► prepwisser.in/questions/AxmWITD1ZN](https://www.prepwisser.in/questions/AxmWITD1ZN)

Q45 JEE Main 2020 · 5 Sep · Shift 2

The volume, in mL, of 0.02 M $\text{K}_2\text{Cr}_2\text{O}_7$ solution required to react with 0.288 g of ferrous oxalate in acidic medium is _____.

(Molar mass of Fe = 56 g mol⁻¹)

Numerical answer — enter the value.

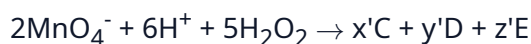
[Step-by-step solution ► prepwisser.in/questions/ibiWpH5w1O](https://www.prepwisser.in/questions/ibiWpH5w1O)

Q46 JEE Main 2020 · 4 Sep · Shift 2

Consider the following equations :



(in basic medium)



(in acidic medium)

The sum of the stoichiometric coefficients x, y, x', y', and z' for products A, B, C, D and E, respectively, is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwisser.in/questions/VRrU2VcH1C](https://www.prepwisser.in/questions/VRrU2VcH1C)

Q47 JEE Main 2024 · 9 Apr · Shift 1

Given below are two statements :

Statement (I) : The oxidation state of an element in a particular compound is the charge acquired by its atom on the basis of electron gain enthalpy consideration from other atoms in the molecule.

Statement (II) : $p\pi - p\pi$ bond formation is more prevalent in second period elements over other periods.

In the light of the above statements, choose the most appropriate answer from the options given below :

(A) Statement I is correct but Statement II is incorrect

(B) Both Statement I and Statement II are correct

(C) Statement I is incorrect but Statement II is correct

(D) Both Statement I and Statement II are incorrect

[Step-by-step solution ► prepwiser.in/questions/0tQ49VWhTV](https://www.prepwiser.in/questions/0tQ49VWhTV)

Q48 JEE Main 2024 · 27 Jan · Shift 1

From the given list, the number of compounds with +4 oxidation state of Sulphur _____.



Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/zrwY6D79if](https://www.prepwiser.in/questions/zrwY6D79if)

Q49 JEE Main 2023 · 6 Apr · Shift 1

In ammonium - phosphomolybdate, the oxidation state of Mo is + _____

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/uDdVkYXAFM](https://www.prepwiser.in/questions/uDdVkYXAFM)

Q50 JEE Main 2023 · 1 Feb · Shift 1

Sum of oxidation states of bromine in bromic acid and perbromic acid is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/68UAmM0rlu](https://www.prepwiser.in/questions/68UAmM0rlu)

Q51 JEE Main 2022 · 28 Jul · Shift 2

On reaction with stronger oxidizing agent like KIO_4 , hydrogen peroxide oxidizes with the evolution of O_2 . The oxidation number of I in KIO_4 changes to _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/aAVGx4CWT1](https://www.prepwiser.in/questions/aAVGx4CWT1)

Q52 JEE Main 2022 · 27 Jul · Shift 1

In the titration of KMnO_4 and oxalic acid in acidic medium, the change in oxidation number of carbon at the end point is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/hhgwZQHqRO](https://www.prepwiser.in/questions/hhgwZQHqRO)

Q53 JEE Main 2022 · 26 Jul · Shift 1

The dark purple colour of KMnO_4 disappears in the titration with oxalic acid in acidic medium. The overall change in the oxidation number of manganese in the reaction is :

- (A) 5 (B) 1
(C) 7 (D) 2

Step-by-step solution ► [prepwiser.in/questions/JjufdyJU-L](https://www.prepwiser.in/questions/JjufdyJU-L)

Q54 JEE Main 2021 · 18 Mar · Shift 2

The oxidation states of nitrogen in NO , NO_2 , N_2O and NO_3^- are in the order of :

- (A) $\text{N}_2\text{O} > \text{NO}_2 > \text{NO} > \text{NO}_3^-$
(B) $\text{NO} > \text{NO}_2 > \text{N}_2\text{O} > \text{NO}_3^-$
(C) $\text{NO}_2 > \text{NO}_3^- > \text{NO} > \text{N}_2\text{O}$
(D) $\text{NO}_3^- > \text{NO}_2 > \text{NO} > \text{N}_2\text{O}$

Step-by-step solution ► [prepwiser.in/questions/cxiOZAAIGn](https://www.prepwiser.in/questions/cxiOZAAIGn)

Q55 JEE Main 2021 · 16 Mar · Shift 2

Fe_xO_y and Fe_yO_x are known when x and y are :

- (A) x = F, Cl, Br, I and y = F, Cl, Br, I (B) x = F, Cl, Br and y = F, Cl, Br, I
(C) x = F, Cl, Br, I and y = F, Cl, Br (D) x = Cl, Br, I and y = F, Cl, Br, I

Step-by-step solution ► [prepwiser.in/questions/M2-320t72Z](https://www.prepwiser.in/questions/M2-320t72Z)

Q56 JEE Main 2021 · 26 Feb · Shift 1

Dichromate ion is treated with base, the oxidation number of Cr in the product formed is _____.

Numerical answer — enter the value.

Step-by-step solution ► [prepwiser.in/questions/9ndyeiXwuf](https://www.prepwiser.in/questions/9ndyeiXwuf)

Q57 JEE Main 2020 · 4 Sep · Shift 1

On heating, lead (II) nitrate gives a brown gas (A). The gas (A) on cooling changes to a colourless solid/liquid (B). (B) on heating with NO changes to a blue solid (C). The oxidation number of nitrogen in solid (C) is :

- (A) +3 (B) +4
(C) +5 (D) +2

Step-by-step solution ► [prepwiser.in/questions/N0I5UL1Fa3](https://www.prepwiser.in/questions/N0I5UL1Fa3)

Q58 JEE Main 2020 · 7 Jan · Shift 1

Oxidation number of potassium in K_2O , K_2O_2 and KO_2 respectively is :

- (A) +1, +2 and +4 (B) +1, +1 and +1
(C) +2, +1 and $+\frac{1}{2}$ (D) +1, +4, and +2

Step-by-step solution ► [prepwiser.in/questions/LirEcM1b97](https://www.prepwiser.in/questions/LirEcM1b97)

Oxidation and Reduction · 4 PYQs

Q59 JEE Main 2024 · 27 Jan · Shift 2

Which of the following cannot function as an oxidising agent?

- (A) SO_4^{2-} (B) MnO_4^-
(C) N^{3-} (D) BrO_3^-

[Step-by-step solution ► prepwisar.in/questions/eBm8zzPMnD](https://www.prepwisar.in/questions/eBm8zzPMnD)

Q60 JEE Main 2023 · 6 Apr · Shift 1

Strong reducing and oxidizing agents among the following, respectively, are :

- (A) Ce^{4+} and Eu^{2+}
(B) Eu^{2+} and Ce^{4+}
(C) Ce^{4+} and Tb^{4+}
(D) Ce^{3+} and Ce^{4+}

[Step-by-step solution ► prepwisar.in/questions/m50poEY8Vu](https://www.prepwisar.in/questions/m50poEY8Vu)

Q61 JEE Main 2020 · 9 Jan · Shift 1

The compound that cannot act both as oxidising and reducing agent is :

- (A) H_3PO_4
(B) H_2SO_3
(C) H_2O_2
(D) HNO_2

[Step-by-step solution ► prepwisar.in/questions/jbEzlkQx2O](https://www.prepwisar.in/questions/jbEzlkQx2O)

Q62 JEE Main 2020 · 7 Jan · Shift 2

The redox reaction among the following is :

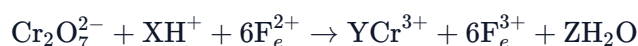
- (A) reaction of H_2SO_4 with NaOH .
(B) formation of ozone from atmosphere oxygen in the presence of sunlight.
(C) combination of dinitrogen with dioxygen at 2000 K
(D) reaction of $[\text{Co}(\text{H}_2\text{O})_6]\text{Cl}_3$ With AgNO_3

[Step-by-step solution ► prepwisar.in/questions/ZnsS-2TPE9](https://www.prepwisar.in/questions/ZnsS-2TPE9)

Balancing Redox Equations · 3 PYQs

Q63 JEE Main 2023 · 13 Apr · Shift 2

See the following chemical reaction:



The sum of X, Y and Z is _____

Numerical answer — enter the value.

[Step-by-step solution ► prepwisar.in/questions/mRsTYiMwnz](https://www.prepwisar.in/questions/mRsTYiMwnz)

Q64 JEE Main 2023 · 30 Jan · Shift 1

The number of electrons involved in the reduction of permanganate to manganese dioxide in acidic medium is _____.

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/FMEmsDAW_7](https://www.prepwiser.in/questions/FMEmsDAW_7)

Q65 JEE Main 2021 · 17 Mar · Shift 1

15 mL of aqueous solution of Fe^{2+} in acidic medium completely reacted with 20 mL of 0.03 M aqueous $\text{Cr}_2\text{O}_7^{2-}$. The molarity of the Fe^{2+} solution is _____ $\times 10^{-2}$ M. (Round off to the Nearest Integer).

Numerical answer — enter the value.

[Step-by-step solution ► prepwiser.in/questions/oASeQ8g4ET](https://www.prepwiser.in/questions/oASeQ8g4ET)

Answer key — Redox Reactions

Numbers match the question numbers above. For full working, open the solution link under each question.

1	6	2	6	3	5	4	6	5	10	6	59	7	3	8	2
9	C	10	B	11	6	12	A	13	8	14	A	15	A	16	D
17	B	18	C	19	24	20	D	21	4	22	30	23	1575	24	18
25	B	26	A	27	C	28	A	29	A	30	6	31	C	32	A
33	B	34	8	35	8	36	B	37	3	38	A	39	D	40	A
41	D	42	C	43	16	44	173	45	50	46	19	47	C	48	3
49	6	50	12	51	5	52	1	53	A	54	D	55	C	56	6
57	A	58	B	59	C	60	B	61	A	62	C	63	23	64	3
65	24														

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