



Topics to be covered



- **Revision of Last Class**
- n factor calculation
- Balancing of redox reaction
- MEDICS Test no 4
- Magarmach Practice Questions (MPQ) & Home work from modules



Rules to Attend Class



- 1. Always sit in a peaceful environment with headphone and be ready with your copy and pen.
- Never ever attend a class from in between or don't join a live class in the middle of the chapter.
- 3. Make sure to revise the last class before attending the next class & always complete your Magarmach Practice Questions.
- 4. Never ever engage in chat whether live or recorded on the topic which is not being discussed in current class as by doing so u can be blocked by the admin team or your subscription can be cancelled.



Rules to Attend Class



- Try to make maximum notes during the class if something is left then u can use the notes pdf after the class to complete the remaining class.
- Always ask your doubts in doubt section to get answer from faculty. Before asking any doubt please check whether same doubt has been asked by someone or not.



There is one big flaw in your Preparation that's name is Backlog? What do we say to Backlog?



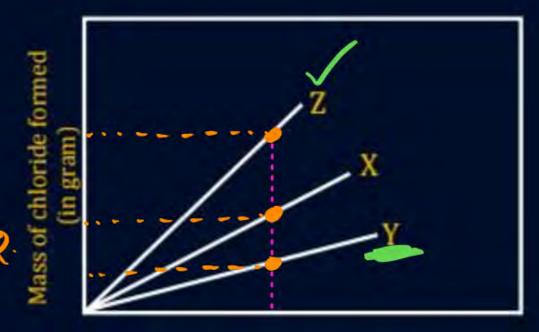
QUESTION

M+cla -> Mcla



Alkaline earth metals (X, Y, Z) on reaction with Cl₂ form chloride. Graph between amount of metal taken (along X-axis) and amount of chloride formed (along Y-axis) is of the type.

Thus, atomic masses of metals X, Y and Z are in



Mass of metal taken (in gram)

A X < Y < Z

order

Z < X < Y

B Y < X < Z





24 Mg Ca 112 = WCa = 240g

10 Mg + 10 Cla > 10 Mg Cla 10 x95=950g.

 $N_{\text{Ca}} = \frac{240}{410} = 6$

6 Ca + 6 Cla > 6 Galla 6 x 1111 = 6669



MEDICS

Mastery

Checks your grasp over NEET-level concepts

Evaluation

Judging both knowledge and test-smartness

Decision Making

Testing your speed + accuracy under pressure

Intuition

Some answers need gut + logic - can you spot the trick?

Concepts

It's all about strong basics no shortcuts here

Strategy

The **MEDICS** test – built for those who heal, hustle, and hope.



Q1. Which of the following statements best defines oxidation?

A. Loss of protons

B. Gain of electrons

D. Loss of electrons
D. None al there

Mg + Cl₂ → MgCl₂

What is the oxidizing agent?

A. Mg

NB. CI2

C. MgCl₂

D. Both Mg and Cl₂ Q5. Which of the following is a reducing agent?

A. H₂0

B. CI₂ D. HCI Q6. When KMnO₄ is reduced in acidic inedium, the change in oxidation number + of Mn is: M₁O₄ > Mn

A. +7 to +4 B. +7 to 0

2. +7 to +2 D. +6 to 3

Q3. Which species undergoes reduction in the following reaction?

A. CO

B. Fe

C. Fe₂O₃

D. CO₂

Q4. What is the oxidation number of sulfur in H₂SO₄?

A. +2

B. +4

S.+6

D. -2

Q7. The n-factor of H₂SO₄ in its reaction with NaOH is:

A. 1

B. 2

C. 0

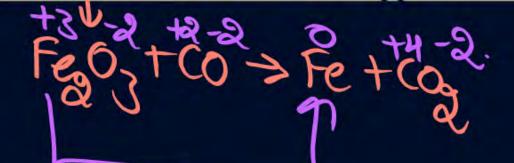
D. 4

HOSON+2NOOH->NOSO

Q8. In which of the following does oxidation occur?

$$\sqrt{A}$$
. $Zn \longrightarrow Zn^{2+} + 2e^{-}$

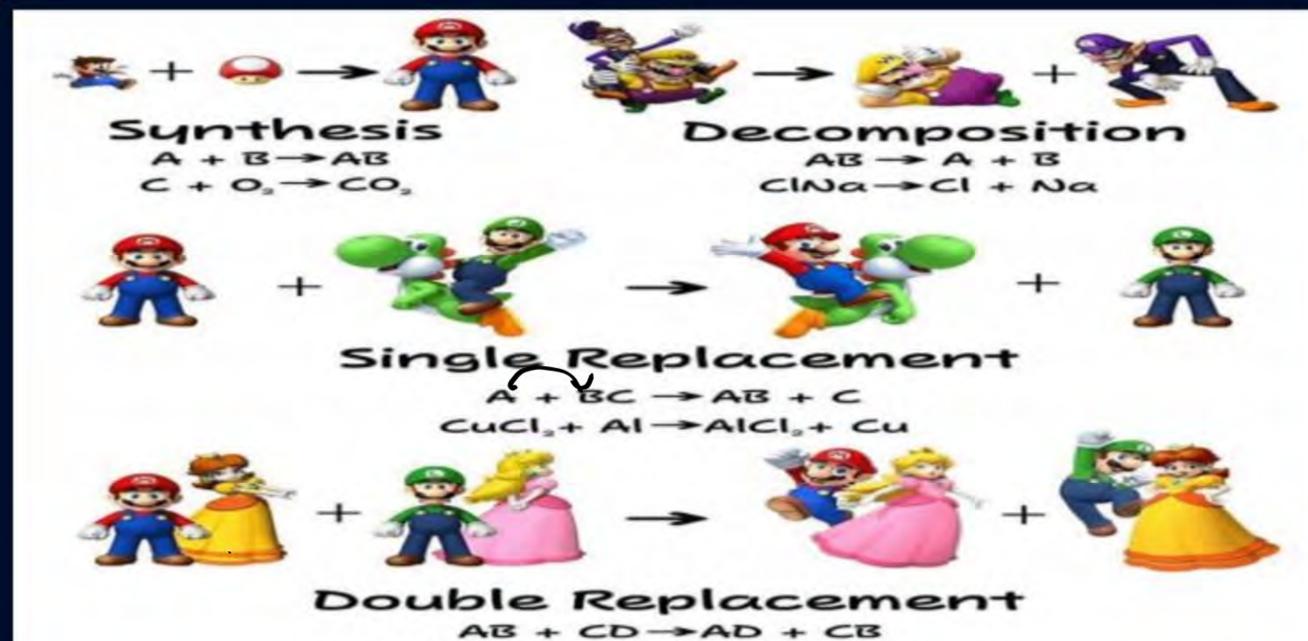
B.
$$Cu^{2+} + 2e^{-} \rightarrow Cu$$





Revision of Last class





Nacl + AgNO, -> NaNO, + Agcl



Disperopositionation. 2 Hood > 2 Hood + 1 Og. pred oxid

Comparationation

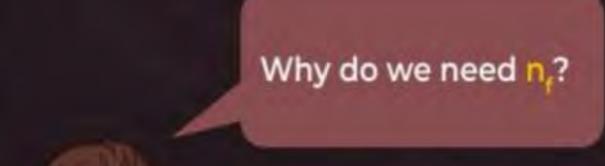
Reverse of disparationation.

2150 + 102 > 2150



n factor calculation





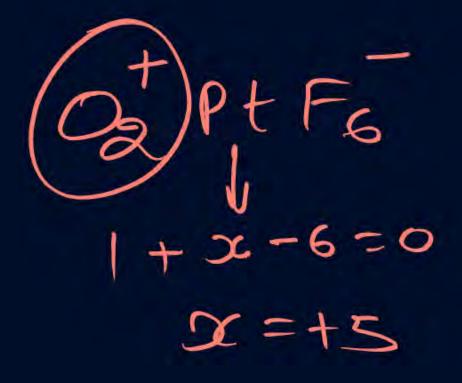


n, is a tool to balance redox reactions.

3 Az By -> Az Bw Totalnf = Snf









If
$$\frac{1}{5} = \frac{3}{2} - \frac{3}{2} - \frac{3}{2} = 6$$

If $\frac{3}{5} = \frac{3}{2} - \frac{3}{2} - \frac{3}{2} = 6$



$$\frac{1}{2} \frac{1}{2} \frac{1$$

Ut ox =
$$3|-|-(-5)|=3$$

®

9 3CJg + 6NaoH -> 5Nau + INauoz + 3tgo Hote Conr. Jindeq maks of NaoH in thus on?

As

$$geq Ga = geq Naon$$

$$31X = 6X n_f$$

$$E_{NaOH} = \frac{5}{5}$$
 $E_{NaOH} = \frac{48}{5} \times 6 = 489$

Py + agr. NGOH -> PHz + Natha Poa + Mao $\int_{12}^{12} \frac{1}{12} = \frac{12}{12} = \frac{12}$ no oxid = 4 0 - (+1) = 4 Opered = 4 0 - (-3) = 12.



In the following change,
$$3\underline{Fe} + 4H_2O \longrightarrow Fe_3O_4 + 4H_2$$

If the atomic mass of fron is 56, then its equivalent mass will be



Seq. mars =
$$\frac{56 \times 3}{8} = \frac{168}{8} = 21$$

1266

doubt



PR-A The eq. mass of Na₂S₂O₃ as reductant in the reaction, $Na_2S_2O_3 + H_2O + Cl_2 \rightarrow Na_2SO_4 + 2HCl + S$

- M/1 nc=2 2-(6))=8
- M/2M/6
- M/8



The eq. mass of iodine in, $I_2 + 2S_2O_3^{2-} \rightarrow 2I^- + S_4O_6^{2-}$ is

- (A) M
- B M/2
- C M/4
- None of these



In the reaction, $CH_3OH \rightarrow HCOOH$ the number of electrons that must be added to the right is



$$CH_3OH \rightarrow HCOOH + Te$$
 $N_1=1 \left| -2-(+3)\right| = 4$
 $N_2=1 \left| -2-(+3)\right| = 4$



In the reaction, $2CuSO_4 + 4KI \rightarrow Cu_2I_2 + 2K_2SO_4 + H_2O + O$ The ratio of equivalent mass of $CuSO_4$ to its molecular mass is

A 1/8

B 1/4

C 1/2

1



In alkaline condition $KMnO_4$ reacts as follows, $2KMnO_4 + 2KOH \rightarrow 2K_2MnO_4 + H_2O$ Therefore, its equivalent mass will be

(A) 31.6
$$E = M = 158$$

$$|\mathbf{B}|$$
 52.7 $|\mathbf{n}_f = 1|7-6|=1$



In the reaction, $2S_2O_3^{2-} + I_2 \rightarrow S_4O_6^{2-} + 2I^-$; The eq. mass of Na₂S₂O₃ is equal to its

Nag Sa 03 Nag Su 06

QUESTION (AIIMS 2018)

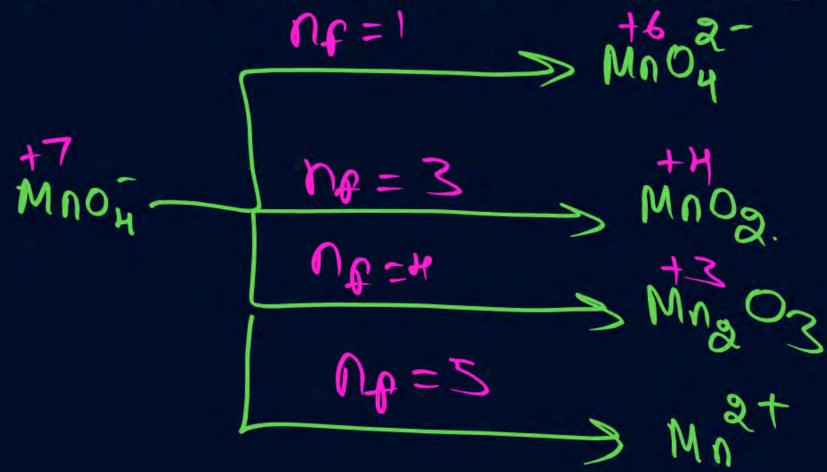


When $KMnO_4$ acts as an oxidizing agent and ultimately forms MnO_4^{2-} , MnO_2 , Mn_2O_3 and Mn^{2+} , then the number of electrons transferred in each case respectively is:





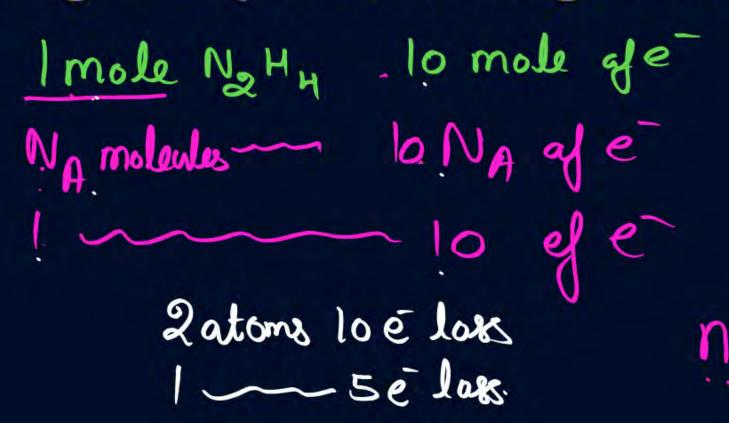
3, 5, 7, 1





One mole of N_2H_4 loses 10 mole of electrons to form a new compound Y. Assuming that all nitrogen appears in the new compound, what is the oxidation number of nitrogen in Y (there is no change in the oxidation state of hydrogen)?

- A -3
- +3
- (C) +5
- D +1



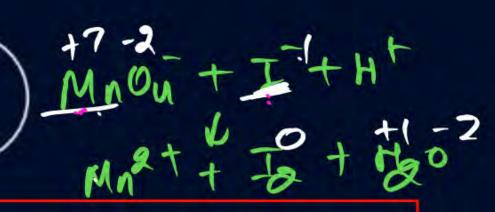
oxidation state of hydrogen
$$\begin{array}{c|c}
N_2 H_{44} & \longrightarrow & \swarrow \\
2x + 4 = 0 \\
2x = -4 \\
\hline
-2 - 2 - 2 = 0
\end{array}$$

$$\begin{array}{c|c}
F = 2 - 2 - 2 = 0 \\
\hline
-2 - 2 | = 5
\end{array}$$

$$\begin{array}{c|c}
2 = +3
\end{array}$$



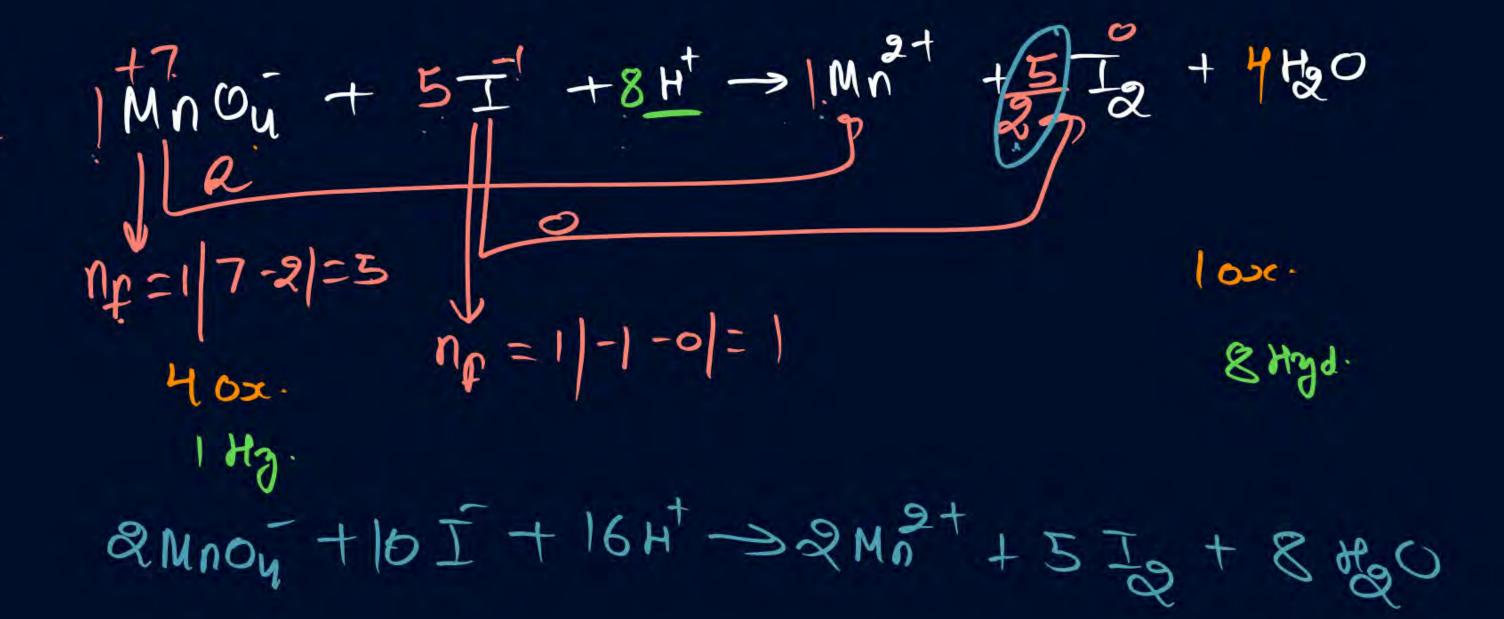
Balancing of Redox Reactions





- (1) Which is oscidiscal & steal
- (2) (S.c.) = $\Omega_f(R)$ & (S.c.) $R = (\Omega_f)$ 0
- 3) Balance all except H&O
- (4) Og balance add Hgo to side deficient
- 3 Balance H
- @ in neutral & acidic = add H' to side deficient
- 6) in basic medium 7 add 150 to side deficient. 2 equal no ef OH to opposite side.





>2Con + 6Fe 16 -22-OX 0 2-3 =)



 $2\frac{16007}{9007} + \frac{13}{600} + \frac{161}{91} \rightarrow 4003 + \frac{161}{600} + \frac{161}{900} + \frac{161}{900} + \frac{161}{900}$ $\frac{1900}{161}$ 2600. Czo-+ 3No + 8# -> 2Gz+ + 3No + 440



$$q - eq oxio = q - eq oxio =$$

QUESTION - (NCERT: PL-246, | JEE Main Feb. 1, 2024 (I))



In acidic medium, $K_2Cr_2O_7$ shows oxidizing action as represented in the half reaction:

$$Cr_2O_7^{2-} + XH^+ + Ye^{\Theta} \rightarrow 2A + ZH_2O$$

X, Y, Z and A are respectively are:

- \bigcirc 8, 6, 4 and Cr_2O_3
- B 14, 7, 6 and Cr³⁺
- 8, 4, 6 and Cr₂O₃
- 14, 6, 7 and Cr³⁺

QUESTION - (NCERT: PL-246 | NV, JEE Main Jan. 31, 2024 (II))



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

QUESTION - (NCERT: PL-246 | NV, JEE Main Jan.30, 2024 (I))



 $2MnO_4 + bl^- + cH_2O \rightarrow xI_2 + yMnO_2 + zOH$

If the above equation is balanced with integral coefficients, the value of z is:

QUESTION - (8th April 1st Shift 2023)



$2IO_3^- + xI^- + 12H^+ \rightarrow 6I_2 + 6H_2O$ What is the value of x?

- A 10
- B 2
- **C** 12
- D 6



Chlorine undergoes disproportionation in alkaline medium as shown below : a $Cl_2(g) + b OH^-(aq) \rightarrow c ClO^-(aq) + d Cl^-(aq) + e H_2O(I)$

The values of a, b, c and d in a balanced redox reaction are respectively:

- A 2, 2, 1 and 3
- B 1, 2, 1 and 1
- 2, 4, 1 and 3
- 3, 4, 4 and 2

QUESTION - (31st Aug 2nd Shift 2021)



In which one of the following sets all species show disproportionation reaction?

- \bigcirc ClO₄-, MnO₄-, ClO₂- and F₂
- B MnO₄-, ClO₂-, Cl₂ and Mn³⁺
- $Cr_2O_7^{2-}$, MnO_4^- , CIO_2^- and Cl_2
- \square CIO₂, F₂, MnO₄⁻ and Cr₂O₇²-

QUESTION (AIIMS 2017)



Consider the following reaction occurring in basic medium $2MnO_4^-(aq) + Br^-(aq) \rightarrow 2MnO_2(s) + BrO_3^-(aq)$ How the above reaction can be balanced further?

- By adding 2 OH- ions on right side
- By adding one H₂O molecule to left side
- By adding 2H+ ions on right side
- D Both (A) and (B)

QUESTION (AIIMS 2005)



In the balanced chemical reaction, $IO_3^- + aI^- + bH^+ \rightarrow cH_2O + dI_2$ a, b, c and d respectively corresponds to:

- A 5, 6, 3, 3
- B 5, 2, 6, 3
- 3, 5, 3, 6
- 5, 6, 5, 5



Home work from modules



Bravambh = 9 44, 45, 48, 49, 50, 51, 53
Porabel = 9 17, 18



Magarmach Practice Questions (MPQ)





QUESTION (NEET 2024)



Which reaction is **NOT** a redox reaction?

- $H_2 + Cl_2 \rightarrow 2HCl$
- BaCl₂ + Na₂SO₄ \rightarrow BaSO₄ + 2NaCl
- C $Zn + CuSO₄ <math>\rightarrow ZnSO₄ + Cu$

QUESTION (NEET 2023)



On balancing the given redox reaction, $aCr_2O_7^{2-} + bSO_3^{2-}(aq) + cH^+(aq) \rightarrow$ $2aCr^{3+}(aq) + bSO_4^{2-}(aq) + c/2 H_2O(l)$ the coefficients a, b and c are found to be respectively:

- A 8, 1, 3
- B 1, 3, 8
- 3, 8, 1
- 1, 8, 3

QUESTION (NEET 2020)



What is the change in oxidation number of carbon in the following reaction? $CH_4(g) + 4Cl_2(g) \rightarrow CCl_4(l) + 4HCl(g)$

- A 0 to +4
- B -4 to +4
- © 0 to -4
- +4 to +4

QUESTION (NEET 2020-Covid)



The oxidation number of the underlined atom in the following species. Identify the incorrect option.

- ClO_3 is +5
- (B) $K_2Cr_2O_7$ is +6
- \bigcirc HAuCl₄ is +3
- D Cu₂O is -1

QUESTION - (AIEEE 2019)



Which of the following reactions are disproportionation reaction?

A.
$$2Cu^+ \longrightarrow Cu^{2+} + Cu^0$$

B.
$$3\text{MnO}_4^{2-} + 4\text{H}^+ \longrightarrow 2\text{MnO}_4^- + \text{MnO}_2 + 2\text{H}_2\text{O}$$

C.
$$2KMnO_4 \xrightarrow{\Delta} K_2MnO_4 + MnO_2 + O_2$$

D.
$$2MnO_4^- + 3Mn^{2+} + 2H_2O \longrightarrow 5MnO_2 + 4H^+$$

Select the correct option from the following:

(A) and (B) only

(A), (B) and (C)

(A), (C) and (D)

(A) and (D) only

QUESTION - (AIEEE 2019)



The correct statement of tribromooctaoxide is:

QUESTION (NEET 2018)



For the redox reaction

$$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$$

The correct coefficients of the reactants for the balanced equation are:

 MnO_4^-

 $C_2O_4^{2-}$

H⁺

A

16

5

2

B

2

5

16

C

5

16

2

D

2

16

5

QUESTION (NEET 2016 - I)



Hot concentrated Sulphuric acid is a moderately strong oxidizing agent. Which of the following reactions does not show oxidizing behavior?

- (A) $C + 2H_2SO_4 \rightarrow CO_2 + 2SO_2 + 2H_2O_3$
- Cu + $2H_2SO_4 \rightarrow CuSO_4 + SO_2 + 2H_2O_3$
- \bigcirc 3S + 2H₂SO₄ \rightarrow 3SO₂ + 2H₂O

QUESTION (NEET 2014)



In acidic medium, H_2O_2 changes $Cr_2O_7^{-2}$ to CrO_5 which has two (-0-0-0) bonds. Oxidation state of Cr in CrO_5 is:

- A +3
- B +6
- **C** -10
- D +5

QUESTION (NEET 2014)



The oxidation state of Cr in CrO₅ is:

- A -6
- B +12
- **(c)** +6
- D +4

QUESTION (AIPMT 2012)



When Cl₂ gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from:

- A zero to +1 and zero to -5
- B zero to -1 and zero to +5
- zero to -1 and zero to +3
- zero to +1 and zero to -3

QUESTION (AIPMT 2009)



Oxidation numbers of P in P O_4^{3-} , of S in SO_4^{2-} and the Cr in $Cr_2O_7^{2-}$ are respectively

- (A) +3, +6 and +5
- B + 5, +3 and +6
- -3, +6 and +6
- +5, +6 and +6

QUESTION (AIPMT 2003)



The oxidation states of Sulphur in the anions SO_3^{2-} , $S_2O_4^{2-}$ and $S_2O_6^{2-}$ follow the order

$$SO_3^{2-} < S_2O_4^{2-} < S_2O_6^{2-}$$

QUESTION (AIPMT 2000)



A compound contains atoms of three elements A, B and C. If the oxidation number of A is +2, B is +5, and that of C is -2. The possible formula of the compound is:

- $A_2(BC_3)_2$
- $(BC_4)_2$
- $A_3(B_4C)_2$
- D ABC₂

QUESTION (AIPMT 1999)



The oxidation number of phosphorus in pyro-phosphoric acid is:

- (A) +3
- B +1
- **(c)** +4
- **D** +5

QUESTION (1988, 1995)



The oxidation number of chromium in potassium dichromate is:

- A +6
- B -5
- **c** -2
- **D** +2

QUESTION (1994)



Phosphorus has the oxidation state of +3 in

- A Phosphorous acid
- Orthophosphoric acid
- C Hypophosphorous acid
- Metaphosphoric acid

QUESTION (1999)



The following redox reaction is balanced by which set of coefficients? $aZn + bNO_3^- + cH^+ \rightarrow dNH_4^+ + eH_2O + fZn^{2+}$

- a b c d e f
- (A) 1 1 10 1 3 1
- B 2 2 10 2 3 2
- (c) 4 2 10 1 3 4
- D 4 1 10 1 3 4

QUESTION (1994)



In which of the following reactions, there is no change in valency?

- $A \times ClO_3 \longrightarrow 3KClO_4 + KCl$
- $SO_2 + 2H_2S \longrightarrow 2H_2O + 3S$
- $BaO_2 + H_2SO_4 \longrightarrow BaSO_4 + H_2O_2$

QUESTION (1994)



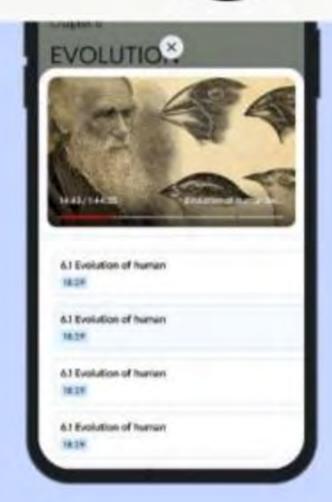
Which substance serves as a reducing agent in the following reaction? $14H^+ + Cr_2O_7^{2-} + 3Ni \rightarrow 2Cr^{3+} + 7H_2O + 3Ni^{2+}$

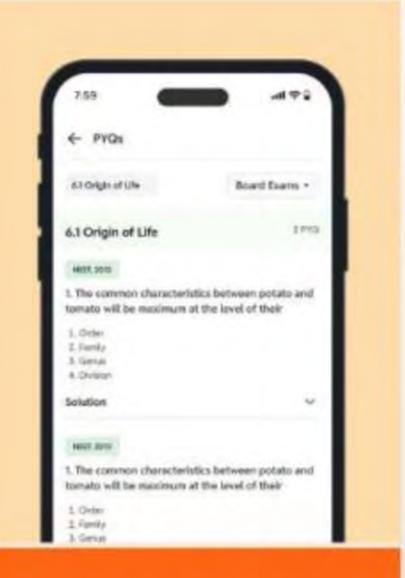
- A H₂O
- B Ni
- C H
- D Cr₂O₇²⁻

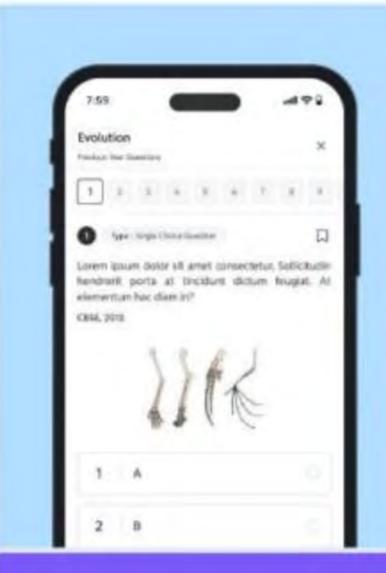
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MEDICS-Test no = 5

Some Bosic Concepts of Chem. -> eq. mass

g. eq.

N, haw of equivalence.

Moderate

Moderate

