



INDIAN SCHOOL AL WADI AL KABIR

Class: XI	Department: SCIENCE 2020 -21 SUBJECT: CHEMISTRY	Date of submission: 20.11.2020
Worksheet No: 08 WITH ANSWERS	Chapter: REDOX REACTIONS	Note: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

MULTIPLE CHOICE QUESTIONS (1 M)

- Find the oxidation state of I in H_4IO_6^-
 - +7
 - +5
 - +1
 - 1
- Which of the following arrangements represent increasing oxidation number of the central atom?
 - CrO_2^- , ClO_3^- , CrO_4^{2-} , MnO_4^-
 - ClO_3^- , CrO_4^{2-} , MnO_4^- , CrO_2^-
 - CrO_2^- , ClO_3^- , MnO_4^- , CrO_4^{2-}
 - CrO_4^{2-} , MnO_4^- , CrO_2^- , ClO_3^-
- The reaction $\text{S}_8 + 12\text{OH}^- \longrightarrow 4\text{S}^{2-} + 2\text{S}_2\text{O}_3^{2-} + 6\text{H}_2\text{O}$ is
 - Combination reaction
 - Decomposition reaction
 - Non-metal displacement
 - Disproportionation reaction
- 'I' cannot act as reducing agent in following state
 - 1
 - +1
 - +7
 - +5
- Oxidation state of Oxygen in O_2F_2 is _____
 - +2
 - +1
 - 1
 - 2

6. Match the following.

Column I	Column II
i. $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$	p. Disproportionation
ii. $\text{Cr}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Cr}$	q. Non-metal displacement
iii. $\text{Fe} + 2\text{HCl} \longrightarrow \text{FeCl}_2 + \text{H}_2$	r. Metal displacement
iv. $\text{P}_4 + 3\text{OH}^- + 3\text{H}_2\text{O} \rightarrow \text{PH}_3 + 3\text{H}_2\text{PO}_2^-$	s. Combination reaction

- a. i – s, ii – p, iii – q, iv- r
- b. i – r, ii – p, iii – q, iv- s
- c. i – s, ii – r, iii – q, iv- p
- d. i – p, ii – q, iii – s, iv- r

7. Write the formula of Iron(II)sulphate

- a. FeSO_4
- b. $\text{Fe}_2(\text{SO}_4)_3$
- c. Fe_2SO_4
- d. $\text{Fe}(\text{SO}_4)_2$

8. Assertion: Oxidation occurs when decrease in electron density is observed.

Reason: Oxidation is gain of electro-positive element.

- a. Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.
- b. Both Assertion and Reason are true and Reason is not the correct explanation of the Assertion.
- c. Assertion is true but Reason is false.
- d. Assertion is false but Reason is true.

9. Assertion: Oxygen has zero oxidation state in O_2 .

Reason: Element in their elemental form have zero oxidation state

- a. Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.
- b. Both Assertion and Reason are true and Reason is not the correct explanation of the Assertion.
- c. Assertion is true but Reason is false.
- d. Assertion is false but Reason is true.

10. Assertion: Reaction $\text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s}) \longrightarrow \text{CuSO}_4(\text{aq}) + \text{Fe}$ does not occur.

Reason: Fe is more reactive than Cu.

- Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.
- Both Assertion and Reason are true and Reason is not the correct explanation of the Assertion.
- Assertion is true but Reason is false.
- Assertion is false but Reason is true.

Short answer type - 2 Marks

11. An iron nail fell into 1M solution of AgNO_3 placed in a glass vessel. What observations will be made?

12. Write the formula of the following compounds.

- Chromium(III)oxide
- Thallium(I) sulphate

Short answer type - 3 Marks

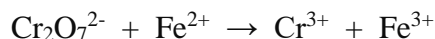
13. Give one example each of the following redox reactions

- Combination reaction
- Decomposition reaction
- Metal displacement reaction

14. a. Justify that the following reaction

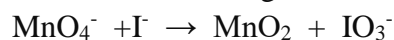


b. Balance the reaction in acid medium.



Long answer type (5M)

15. a. Balance the following reactions in basic medium.



b. Consider the elements: Cs, Ne, I and F

- Identify the element that exhibits only negative oxidation state.
- Identify the element that exhibits only positive oxidation state
- Identify the element that exhibits both positive and negative oxidation states.
- Identify the element which exhibits neither the negative nor does the positive oxidation state

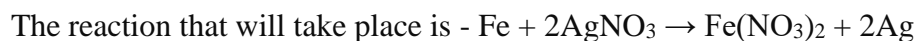
ANSWER KEY

Hints

- a
- a
- d
- c
- b

6. c
7. a
8. c
9. a
10. a

11. As iron is more reactive than silver, iron will displace silver from the solution.

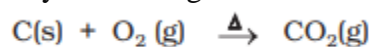


Upon dipping an iron nail into silver nitrate, a coating of silver will deposit on the iron surface.

The solution, which is initially colourless, begins to get a light green colour.

- 12.i. Cr_2O_3
ii. Ti_2SO_4

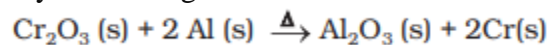
13. a. Any suitable eg



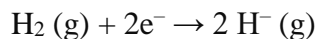
b. Any suitable eg



c. Any suitable eg

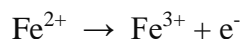
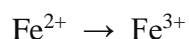


14. a. $2\text{Na}(\text{s}) \rightarrow 2\text{Na}^+(\text{g}) + 2\text{e}^-$

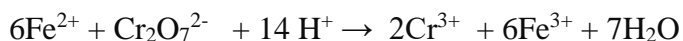
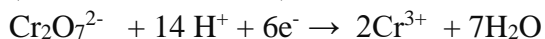
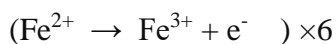
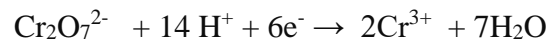
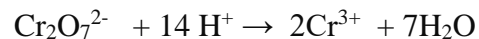
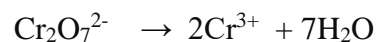
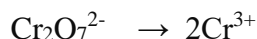
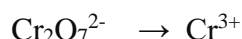


Sodium is oxidised and hydrogen is reduced,

b. Oxidation half

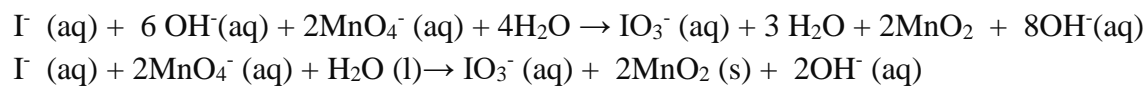
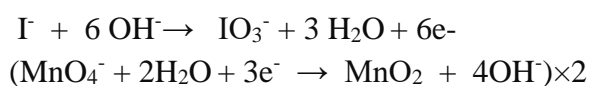


Reduction half



15. a. $\text{MnO}_4^- + \text{I}^- \rightarrow \text{MnO}_2 + \text{IO}_3^-$

Oxidation half	Reduction half
$\text{I}^- (\text{aq}) \rightarrow \text{IO}_3^- (\text{aq})$	$\text{MnO}_4^- (\text{aq}) \rightarrow \text{MnO}_2 (\text{s})$
$\text{I}^- (\text{aq}) + 3\text{H}_2\text{O} (\text{l}) \rightarrow \text{IO}_3^- (\text{aq})$	$\text{MnO}_4^- (\text{aq}) \rightarrow \text{MnO}_2 (\text{s}) + 2\text{H}_2\text{O}$
$\text{I}^- (\text{aq}) + 3\text{H}_2\text{O} (\text{l}) \rightarrow \text{IO}_3^- (\text{aq}) + 6\text{H}^+ (\text{aq})$	$\text{MnO}_4^- (\text{aq}) + 4\text{H}^+ (\text{aq}) \rightarrow \text{MnO}_2 (\text{s}) + 2\text{H}_2\text{O}$
$\text{I}^- (\text{aq}) + 3\text{H}_2\text{O} (\text{l}) + 6\text{OH}^- (\text{aq}) \rightarrow \text{IO}_3^- (\text{aq}) + 6\text{H}^+ (\text{aq}) + 6\text{OH}^- (\text{aq})$	$\text{MnO}_4^- (\text{aq}) + 4\text{H}^+ (\text{aq}) + 4\text{OH}^- (\text{aq}) \rightarrow \text{MnO}_2 (\text{s}) + 2\text{H}_2\text{O} (\text{l}) + 4\text{OH}^- (\text{aq})$
$\text{I}^- (\text{aq}) + 3\text{H}_2\text{O} (\text{l}) + 6\text{OH}^- (\text{aq}) \rightarrow \text{IO}_3^- (\text{aq}) + 6\text{H}_2\text{O} (\text{l})$	$\text{MnO}_4^- (\text{aq}) + 4\text{H}_2\text{O} (\text{l}) \rightarrow \text{MnO}_2 (\text{s}) + 2\text{H}_2\text{O} (\text{l}) + 4\text{OH}^- (\text{aq})$
$\text{I}^- (\text{aq}) + 6\text{OH}^- (\text{aq}) \rightarrow \text{IO}_3^- (\text{aq}) + 3\text{H}_2\text{O} (\text{l}) + 6\text{e}^-$	$\text{MnO}_4^- (\text{aq}) + 2\text{H}_2\text{O} (\text{l}) + 3\text{e}^- \rightarrow \text{MnO}_2 (\text{s}) + 4\text{OH}^- (\text{aq})$



- b. i. F
 ii. Cs
 iii. I
 iv. Ne

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