

8. REDOX REACTIONS

Assertion - Reasoning Type

This section contains 0 questions numbered 1 to 0. Each question contains STATEMENT 1 (Assertion) and STATEMENT 2 (Reason). Each question has the 4 choices (a), (b), (c) and (d) out of which **ONLY ONE** is correct.

- a) Statement 1 is True, Statement 2 is True; Statement 2 **is** correct explanation for Statement 1
- b) Statement 1 is True, Statement 2 is True; Statement 2 **is not** correct explanation for Statement 1
- c) Statement 1 is True, Statement 2 is False
- d) Statement 1 is False, Statement 2 is True

1

Statement 1: Change in colour of acidic solution of potassium dichromate by breath is used to test drunk drivers.

Statement 2: Change in colour is due to the complexation of alcohol with potassium dichromate.

2

Statement 1: $\text{Mg(s)} + \text{F}_2\text{(s)} \rightarrow \text{MgF}_2\text{(s)}$: Magnesium loses electrons and acts as a reducing agent.

Statement 2: Reduction in general means acceptance of electrons by a reactant.

3

Statement 1: Bromide ion is serving as a reducing agent in a reaction.

Statement 2: Oxidation number of Br increases from -1 to 5.

4

Statement 1: Nitrous acid may act as an oxidizing agent as well as a reducing agent.

Statement 2: The oxidation number of nitrogen remains the same in all the compounds.

5

Statement 1: Both oxygen atoms in O_2 or O_3 have an oxidation number of -2.

Statement 2: Oxygen is assigned an oxidation number of -2 in almost all its compounds.

6

Statement 1: Oxidation number of Ni is zero.

Statement 2: Nickel is bonded to a neutral ligand carbonyl.

: ANSWER KEY :

- 1) c 2) a 3) a 4) c
5) d 6) a

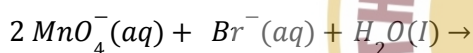


: HINTS AND SOLUTIONS :

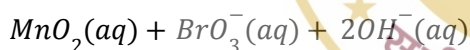
1 (c) Potassium dichromate react with alcohol and the reduction of potassium dichromate takes place and dichromate (orange red) changes to Cr^{3+} (green).

2 (a) In general, oxidation is the loss of electrons and the reactant like, magnesium that loses electrons acts as a reductant or reducing agent.

3 (a)
+7



+ 4 + 5



Oxidation number is changes as -1 to + 5 (so loss of $6e^-$).

4 (c) Oxidation number of N is changed according to compounds

(-1 to +5) N has five types of oxides as NO_2 , NO , N_2O_3 , N_2O_4 and N_2O_5 . All have different oxidation states in different compounds.

5 (d) Each atom in an elemental form is assigned an oxidation number of zero. For example, hydrogen atom in H_2 and oxygen atom in O_2 or O_3 , carbon in diamond and graphite, all have oxidation number equal to zero.

6 (a) Oxidation number of N CO=0 (zero) as it a neutral ligand.

Oxidation number of Ni in $[Ni(CO)_4]$ is also zero.