

1. Copper wire test for halogens is known as:-

- (1) Duma's Test
- (2) Beilstein's Test
- (3) Lassigne's Test
- (4) Liebig's Test

Solution:

Copper wire test for halogens is known as Beilstein's Test.
Hence option (2) is the answer.

2. Beilstein test is used for estimation of which one of the following elements?

- (1) S
- (2) Cl
- (3) C and H
- (4) N

Solution:

The Beilstein test is a chemical test for organic halides. In the given options, Cl is in the halogen group.
Hence option (2) is the answer.

3. Which of the following statements about Na_2O_2 is not correct?

- (1) Na_2O_2 oxidises Cr^{3+} to CrO_4^{2-} in acid medium
- (2) It is diamagnetic in nature
- (3) It is the superoxide of sodium
- (4) It is a derivative of H_2O_2

Solution:

Na_2O_2 is the peroxide of sodium.
Hence option (3) is the answer.

4. Which of the following salts is the most basic in aqueous solution?

- (1) CH_3COOK
- (2) FeCl_3
- (3) $\text{Pb}(\text{CH}_3\text{COO})_2$
- (4) AlCN_2

Solution:

$\text{CH}_3\text{COOK} + \text{H}_2\text{O} \rightarrow \text{CH}_3\text{COOH} + \text{KOH}$
KOH is a strong base and CH_3COOH is a weak acid.
So the solution is basic in nature.

Hence option (1) is the answer.

5. Which one of the following exhibits the largest number of oxidation states?

- (1) Mn(25)
- (2) V(23)
- (3) Cr (24)
- (4) Ti (22)

Solution:

Mn can show 6 oxidation state from +2 to +7. It has 5 unpaired electrons in 3d orbitals and 2 electrons in 4s.

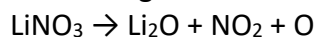
Hence option (1) is the answer.

6. The products obtained on heating LiNO_3 will be:-

- (1) $\text{LiNO}_2 + \text{O}_2$
- (2) $\text{Li}_2\text{O} + \text{NO}_2 + \text{O}_2$
- (3) $\text{Li}_3\text{N} + \text{O}_2$
- (4) $\text{Li}_2\text{O} + \text{NO} + \text{O}_2$

Solution:

On heating lithium nitrate, lithium oxide and nitrogen dioxide are obtained.



Hence option (2) is the answer.

7. Fire extinguishers contain H_2SO_4 and which one of the following:-

- (1) CaCO_3
- (2) NaHCO_3 and Na_2CO_3
- (3) Na_2CO_3
- (4) NaHCO_3

Solution:

Fire extinguishers contain H_2SO_4 and NaHCO_3 .

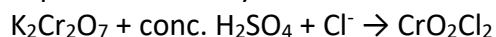
Hence option (4) is the answer.

8. Potassium dichromate when heated with concentrated sulphuric acid and a soluble chloride, gives brown-red vapours of:

- (1) CrO_3
- (2) Cr_2O_3
- (3) CrCl_3
- (4) CrO_2Cl_2

Solution:

When potassium dichromate is heated with concentrated H_2SO_4 and a soluble chloride, brownish-red vapours of chromyl chloride is formed.



Hence option (4) is the answer.

9. Identify incorrect statement

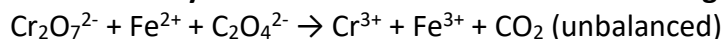
- (1) Copper (I) compounds are colourless except where colour results from charge transfer
- (2) Copper (I) compounds are diamagnetic
- (3) Cu_2S is black
- (4) Cu_2O is colourless

Solution:

Cuprous oxide, Cu_2O is red in colour. So statement 4 is wrong.

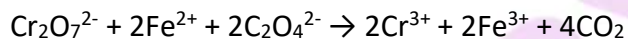
Hence option (4) is the answer.

10. How many electrons are involved in the following redox reaction?



- (1) 3
- (2) 4
- (3) 5
- (4) 6

Solution:



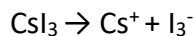
6 electrons are involved in this reaction.

Hence option (4) is the answer.

11. The correct statement for the molecule, CsI_3 is:

- (1) it contains Cs^{3+} and I^- ions
- (2) it contains Cs^{3+} and I^+ ions
- (3) it is a covalent molecule
- (4) it contains Cs^{3+} and I_3^- ions

Solution:



Hence option (4) is the answer.

12. Copper becomes green when exposed to moist air for a long period. This is due to:-

- (1) the formation of a layer of cupric oxide on the surface of copper.
- (2) the formation of basic copper sulphate layer on the surface of the metal
- (3) the formation of a layer of cupric hydroxide on the surface of copper.
- (4) the formation of a layer of basic carbonate of copper on the surface of copper.

Solution:

When exposed to air, Copper metal turns green in colour because of corrosion. The metal reacts with moisture and atmospheric gases to form a mixture of copper carbonate and copper hydroxide.

Hence option (4) is the answer.

13. Which of the following statements is incorrect?

- (1) Fe^{2+} ion also gives blood red colour with SCN^- ion
- (2) Cupric ion reacts with an excess of ammonia solution to give a deep blue colour of $[\text{Cu}(\text{NH}_3)_4]^{2+}$ ion.
- (3) Fe^{3+} ion gives blood red colour with SCN^- ion.
- (4) On passing H_2S into Na_2ZnO_2 solution, a white ppt of ZnS is formed.

Solution:

Only Fe^{3+} ions give a blood-red colour with SCN^- ions. So statement (1) is wrong.
Hence option (1) is the answer.

14. Amongst the following, identify the species with an atom in +6 oxidation state:

- (1) $[\text{MnO}_4]^-$
- (2) $[\text{Cr}(\text{CN})_6]^{3-}$
- (3) Cr_2O_3
- (4) CrO_2Cl_2

Solution:

Oxidation state of Cr in CrO_2Cl_2 is +6.
Hence option (4) is the answer.

15. Which one of the following cannot function as an oxidising agent?

- (1) $\text{NO}_3^-(\text{aq})$
- (2) I^-
- (3) $\text{Cr}_2\text{O}_7^{2-}$
- (4) $\text{S}_{(\text{s})}$

Solution:

I^- has lowest oxidation state. It can act as a strong reducing agent.
Hence option (2) is the answer.