## Chapter - 1

# **Chemical Reactions and Equations**

## (Assertion and Reasoning Questions)

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Q.1. Assertion (A) :** Decomposition of vegetable matter into compost is an example of exothermic reactions.

**Reason (R) :** Exothermic reaction are those reactions in which heat is evolved.

**Q.2. Assertion (A) :** When HCl is added to zinc granules, a chemical reaction occurs.

**Reason (R) :** Evolution of a gas and change in colour indicate that the chemical reaction is taking place.

**Q.3. Assertion (A) :** Calcium carbonate when heated gives calcium oxide and water.

**Reason (R) :** On heating calcium carbonate, decomposition reaction takes place.

**Q.4. Assertion (A) :** Brown fumes are produced when lead nitrate is heated.

**Reason (R) :** Nitrogen dioxide gas is produced as a by product due to the decomposition of lead nitrate.

**Q.5. Assertion (A) :** White silver chloride turns grey in sunlight.

**Reason (R) :** Decomposition of silver chloride in presence of sunlight takes place to form silver metal and chlorine gas.

**Q.6. Assertion (A):** Pungent smelling gas is produced when sulphur burns in air.

**Reason (R) :** Sulphur trioxide is formed on reaction of sulphur with oxygen.

**Q.7. Assertion (A) :** In a reaction of copper with oxygen, copper serves as a reducing agent.

**Reason (R) :** The substance which gains oxygen in a chemical reaction acts as a reducing agent.

**Q.8. Assertion (A) :** In electrolysis of water, the volume of hydrogen liberated is twice the volume of oxygen formed.

**Reason (R) :** Water (H,0) has hydrogen and oxygen in the ratio of 1:2 by volume.

Q.9. Assertion (A): Corrosion of iron is commonly known as rusting.

Reason (R) : Corrosion of iron occurs in presence of water and air.

**Q.10. Assertion (A) :** The balancing of chemical equations is based on law of conservation of mass.

**Reason (R) :** Total mass of reactants is equal to total mass of products.

**Q.11. Assertion (A):** In a balanced chemical equation, total mass of the reactants is equal to the total mass of the products.

**Reason (R):** Mass can neither be created nor destroyed during a chemical change.

**Q.12.** Assertion (A): Iron articles are painted so as to prevent them from rusting.

**Reason (R) :** When the surface of iron is coated with paint, its surface does not come in contact with oxygen and moisture therefore rusting does not take place.

**Q.13. Assertion (A) :** Chemical reaction changes the physical and chemical state of a substance.

**Reason (R) :** When electric current is passed through water (liquid), it decomposes to produce hydrogen and oxygen gases.

**Q.14. Assertion (A):** When calcium carbonate is heated, it decomposes to give calcium oxide and carbon dioxide.

**Reason (R):** The decomposition reaction takes place on application of heat, therefore, it is an endothermic reaction.

**Q.15. Assertion (A):** Zinc reacts with sulphuric acid to form zinc sulphate and hydrogen gas and it is a displacement reaction.

Reason (R): Zinc reacts with oxygen to form zinc oxide

**Q.16. Assertion (A):** Chips manufacturers usually Ilush bags of chips with gas such as nitrogen to prevent the chips from getting oxidised.

Reason (R): This increase the taste of the chips and helps in their digestion.

**Q.17. Assertion (A):** Exposure of silver chloride to sunlight for a long duration turns grey due to the formation of silver by decomposition of silver chloride.

**Reason (R):** In this process, sublimation of silver chloride takes place.

**Q.18. Assertion (A):** Rusting of iron metal is the most common form of corrosion.

**Reason (R):** The effect of rusting of iron can be reversed if they are left open in sunlight.

**Q.19.** Assertion (A): AgBr is used on photographic and X-ray film.

**Reason (R):** AgBr is photosensitive and changes to Ag and bromine in presence of sunlight and undergoes decomposition reaction.

**Q.20. Assertion (A):** Magnesium ribbon keeps on burning in atmosphere of nitrogen.

**Reason (R) :** Magnesium reacts with nitrogen to form magnesium nitride and this reaction is combination reaction.

**Q.21. Assertion (A):** A lead nitrate on thermal decomposition gives lead oxide, brown coloured nitrogen dioxide and oxygen gas.

**Reason (R):** Lead nitrate reacts with potassium iodide to form yellow ppt. of lead iodide and the reaction is double displacement as well as precipitation reaction.

#### -X-X-X-

### **ANSWER KEY**

- Q.1:(a)Q.2:(b)Q.3:(d)Q.4:(a)Q.5:(a)Q.6:(c)Q.7:(a)Q.8:(c)
- **Q.9**: (b) **Q.10**: (a)

**Q.11** : (a) This is due to the conservation of mass.

**Q.12**: (a) **Q.13**: (b)

**Q.14** : (b) CaCO3 on heating gives CO2 and CaO.

**Q.15** : (b) Decomposition reaction is a reaction in which a compound breaks down into two or more simpler substances.

**Q.16** : (c) Nitrogen being antioxidant prevents the chips from being oxidised.

**Q.17**: (c) **Q.18**: (c)

**Q.19** : (a) AgBr is a chemical compound. It is widely used in photography as photographic emulsions.

**Q.20**: (a) **Q.21**: (b)