I. Answer the following questions:

1. Define the following: a) Neutralization reaction b) Exothermic reaction c) Endothermic reaction.

Ans: a) Neutralization reaction: A chemical reaction of an acid with a base to form salt and water is called neutralization reaction OR It is a chemical reaction in which H+ ions from an acid react completely with OH- ions from a base to form undissociated water molecules.

b) Exothermic reaction: A chemical reaction in which heat energy is given out or liberated is called an exothermic reaction.

c) Endothermic reaction: A chemical reaction in which heat energy is absorbed is called an endothermic reaction.

2. Write any five uses of neutralization reaction in our day today life.
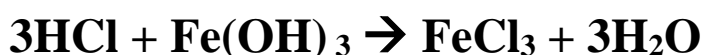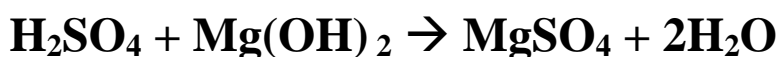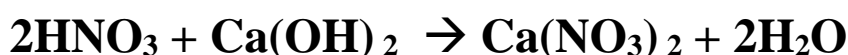
Ans:

- The acidity of soil is removed by adding slaked lime.

- Antacid tablets containing magnesium hydroxide is given to the person suffering from acidity.

- Astronauts in the space ships use alkali to neutralize the harmful levels of carbon dioxide, etc.

- Vinegar is used to cure wasp stings that are alkaline in nature.

- Baking powder is used to cure bee stings and ant bites that are acidic in nature.

- Toothpaste contains bases that neutralise the acid produced by bacteria in our mouth.

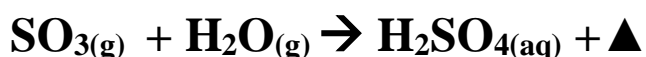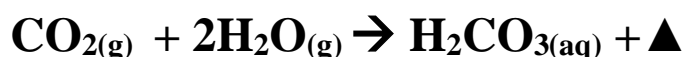- Baking powder is usually used to help the cakes rise.

3. Write any three balanced equations for the following

a) Neutralization reaction b) Exothermic reaction c) Endothermic reaction.

Ans: a) Neutralization reaction

$2HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + 2H_2O$

$H_2SO_4 + Mg(OH)_2 \rightarrow MgSO_4 + 2H_2O$

$3HCl + Fe(OH)_3 \rightarrow FeCl_3 + 3H_2O$

b) Exothermic reaction

$C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)} + 94.00 \text{ kcal}$

$2H_{2(g)} + O_{2(g)} \rightarrow H_2O_{(l)} + 136.00 \text{ kcal}$

$CO_{2(g)} + 2H_2O_{(g)} \rightarrow H_2CO_{3(aq)} + \blacktriangle$

$SO_{3(g)} + H_2O_{(g)} \rightarrow H_2SO_{4(aq)} + \blacktriangle$

c) Endothermic reaction.

$C_{(s)} + 2S_{(g)} \rightarrow CS_{2(g)}$ **- Heat energy**

$C_{(s)} + H_2O_{(g)} \rightarrow CO_{(g)} + H_2$ **-31.4 kcal**

$Ba(OH)_{2(aq)} + NH_4Cl_{(s)} + Heat \rightarrow BaCl_{2(s)} + 2NH_4OH_{(aq)}$