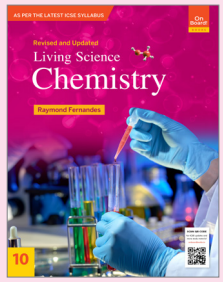
ICSE Living Science CHEMISTRY

Class 10



Multiple-Choice Questions

CHAPTER 10: STUDY OF COMPOUNDS – NITRIC ACID

1. During lightning discharge, when the temperature is very high, atmospheric nitrogen combines with oxygen of the air to form .....
   (a) nitric oxide.
   (b) nitrogen dioxide.
   (c) nitrous oxide.
   (d) nitric acid.
   Ans: a

2. Nitric acid is found in the combined state as
   (a) chile saltpetre.
   (b) saltpetre.
   (c) lime saltpetre.
   (d) all of these.
   Ans: d

3. The reaction mixture in the lab preparation of nitric acid is not heated beyond 200 °C because
   (a) at high temperature, nitric acid decomposes to form nitrogen dioxide gas.
   (b) the residue of NaCl and KCl forms a hard crust and sticks to the glass walls, which is difficult to remove and also leads to wastage of fuel.
   (c) at high temperature, there is less yield of nitric acid.
   (d) the reaction does not initiate at higher temperature.
   Ans: a

4. Pure nitric acid is colourless but the nitric acid obtained in lab preparation is ..... in colour.
   (a) red
   (b) yellow
   (c) orange
   (d) brown
   Ans: b

5. Nitric acid is concentrated by distilling the acid over .....
   (a) concentrated hydrochloric acid.
   (b) concentrated acetic acid.
   (c) concentrated citric acid.
   (d) concentrated sulphuric acid.
   Ans: d

6. The ..... process is the single most important process for the manufacture of nitric acid.
   (a) Haber-Bosch
   (b) Hoope's
   (c) Ostwald
   (d) Baeyers's
   Ans: c

7. The catalytic chamber in the Ostwald process possesses a platinum gauze catalyst, which is initially heated to a temperature of .....

(a) 500 °C
(b) 600 °C
(c) 700 °C
(d) 800 °C

Ans: d

8. A higher ratio of air is used in the catalytic chamber in the Ostwald process because

(a) reaction in only catalytic chamber uses air.
(b) reactions in only catalytic chamber and oxidizing chamber use air.
(c) reactions in catalytic chamber, oxidizing chamber and absorption tower use air.
(d) higher ratio of air controls the output of the reactions.

Ans: c

9. Quartz stones are used in the absorption tower because

(a) these stones are acid resistant.
(b) these stones slow down the movement of gaseous nitrogen dioxide.
(c) these stones initiate better dissolution of nitrogen dioxide in water.
(d) all of these.

Ans: d

10. All three reactions in the Ostwald process are reversible; therefore

(a) an increase in the concentration of the reactants favours the forward reactions.
(b) an increase in the concentration of the reactants favours the backward reactions.
(c) an increase in the concentration of the reactants stops the reactions.
(d) an increase in the concentration of the reactants stabilizes the reactions.

Ans: a

11. The ..... ions formed when nitric acid is dissolved in water are responsible for the colour changes in the indicators.

(a) hydroxyl
(b) hydronium
(c) nitrate
(d) nitrite

Ans: b

12. Dilute nitric acid does not give hydrogen with metals because of its strong ..... property.

(a) reducing
(b) oxidizing
(c) neutralizing
(d) ionizing

Ans: b

13. $NaHSO_3 + HNO_3 \rightarrow NaNO_3 + H_2O +$ ..... $\uparrow$

(a) SO_3
(b) SO_2
(c) S
(d) H_2S

Ans: b

14. Nitric acid reacts with metallic sulphides to form .....

(a) hydrogen sulphide.
(b) sulphur dioxide.
(c) sulphuric acid.
(d) sulphur.

Ans: a

15. Hot and concentrated nitric acid oxidizes carbon to
    (a) carbon monoxide.
    (b) carbonic acid.
    (c) carboxylic acid.
    (d) carbon dioxide.
    Ans: d

16. On reacting with concentrated nitric acid, ... liberates reddish brown fumes of nitrogen dioxide.
    (a) zinc
    (b) sodium
    (c) copper
    (d) none of these
    Ans: c

17. Organic compounds undergo ..... when reacted with nitric acid.
    (a) oxidation
    (b) reduction
    (c) nitration
    (d) addition
    Ans: c

18. In the Brown Ring Test, the final product formed is
    (a) hydrated nitrogen ferrous sulphate.
    (b) hydrated nitroso ferric sulphate.
    (c) hydrated nitroso nitrate sulphate.
    (d) hydrated nitroso ferrous sulphate.
    Ans: d

19. Which of the following is not a use of nitric acid?
    (a) Making plastics-like cellulose nitrate fibres.
    (b) Pickling of stainless steel.
    (c) Preparation of hydrochloric acid.
    (d) Manufacture of fertilizers.
    Ans: c

20. Nitric acid is used in rocket fuels as an oxidizer as it gives large amount of ..... on oxidation.
    (a) hydrogen
    (b) oxygen
    (c) nitrogen
    (d) carbon dioxide
    Ans: b