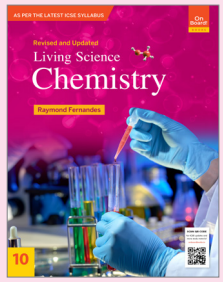
ICSE Living Science CHEMISTRY

Class 10



Multiple-Choice Questions

CHAPTER 4: ANALYTICAL CHEMISTRY

1. Which of the following groups of elements usually forms coloured compounds?
   (a) Normal elements
   (b) Transition elements
   (c) Inner transition elements
   (d) Inert gases
   Ans: b

2. Which of these anions and its colour is not matched correctly?
   (a) Permanganate ion – pink
   (b) Dichromate ion – orange
   (c) Sulphate ion – green
   (d) Chromate ion – yellow
   Ans: c

3. If a white precipitate is formed on reaction with NaOH which is insoluble in excess sodium hydroxide, then the metal cation in the salt solution is
   (a) Pb^{2+} (b) Zn^{2+} (c) Cu^{2+} (d) Ca^{2+}
   Ans: d

4. NaOH solution is added to the solutions containing the ions mentioned in Column A. Column B gives the details of the precipitate. Match the ions with their coloured precipitates.

Column A	*Column B*
(i) Pb^{2+}	(A) White gelatinous precipitate soluble in excess of NaOH
(ii) Fe^{2+}	(B) White precipitate soluble in excess of NaOH
(iii) Zn^{2+}	(C) Bluish white precipitate insoluble in excess of NaOH
(iv) Ca^{2+}	(D) Dirty green precipitate insoluble in excess of NaOH
(v) Cu^{2+}	(E) Chalky white precipitate soluble in excess of NaOH

   Choose the correct option.
   (a) (i)–(B), (ii)–(C), (iii)–(A), (iv)–(D), (v)–(E)
   (b) (i)–(A), (ii)–(D), (iii)–(C), (iv)–(E), (v)–(B)
   (c) (i)–(E), (ii)–(D), (iii)–(A), (iv)–(B), (v)–(C)
   (d) (i)–(C), (ii)–(E), (iii)–(D), (iv)–(B), (v)–(A)
   Ans: c

5. The salt solution which does not react with ammonium hydroxide is
   (a) Calcium nitrate. (b) Zinc nitrate. (c) Lead nitrate. (d) Copper nitrate.
   Ans: a

6. When ammonium hydroxide is added to ferric chloride solution
   (a) reddish brown precipitate is formed which is insoluble in excess ammonium hydroxide.
   (b) reddish brown precipitate is formed which is soluble in excess ammonium hydroxide.
   (c) dirty green precipitate is formed which is insoluble in excess ammonium hydroxide.

(d) dirty green precipitate is formed which is soluble in excess ammonium hydroxide.

Ans: a

7. When ammonium hydroxide is added to copper sulphate solution

(a) light blue precipitate is formed which is insoluble in excess ammonium hydroxide.

(b) light blue precipitate is formed which is soluble in excess ammonium hydroxide.

(c) white precipitate is formed which does not dissolve in excess ammonium hydroxide.

(d) white precipitate is formed which dissolves in excess ammonium hydroxide.

Ans: b

8. The compound formed when zinc hydroxide reacts with excess of ammonium hydroxide is

(a) zinc oxide. (b) ammonium zincate.

(c) tetraaminezinc hydroxide. (d) sodium zincate.

Ans: c

9. Colour of the precipitate formed on adding NaOH solution to iron(II) sulphate solution is

(a) white. (b) brown. (c) dirty green. (d) pale blue.

Ans: c

10. Amphoteric oxides are those compounds

(a) which react with both acids and alkalis to form salt and water.

(b) which react with acids to form salt and water.

(c) which react with alkalis to form salt and water.

(d) none of the above.

Ans: a

11. Which of the following are not amphoteric oxides?

(i) ZnO (ii) CuO (iii) PbO

(iv) MgO (v) $Al2O_3$

Select the correct option.

(a) (i) and (v) (b) (i), (ii) and (iv) (c) (ii) and (iv) (d) (i), (iii) and (v)

Ans: c

12. The solution which can separate the components of CuO and ZnO mixture is

(a) Sodium hydroxide. (b) Ammonium hydroxide.

(c) Both (a) and (b). (d) Ammonium chloride.

Ans: a

13. Which of the following is not an amphoteric hydroxide?

(a) $Zn(OH)_2$ (b) $Al(OH)_3$ (c) $Pb(OH)_2$ (d) $Mg(OH)_2$

Ans: d

14. The gas liberated when hot and concentrated caustic alkalis such as NaOH and KOH react with amphoteric metals like aluminium, zinc and lead is

(a) oxygen. (b) hydrogen. (c) carbon dioxide. (d) helium.

Ans: b

15. Complete the equation with the option given below.

$$Al(OH)_3 + NaOH \rightarrow \ldots\ldots\ldots + 2H_2O$$

(a) Al_2O_3 (b) $Al_2(OH)_3$ (c) $Na_2Al_2O_3$ (d) $NaAlO_2$

Ans: d

16. A metal which produces hydrogen on reacting with alkali as well as with acid is

(a) Iron. (b) Magnesium. (c) Zinc. (d) Copper.

Ans: c

17. Copper statues such as the Statue of Liberty in New York is coated with a green layer of ..... because of its exposure to air for a long time.

(a) copper carbonate (b) sodium zincate (c) potassium aluminate (d) Zinc hydroxide

Ans: a

18. Which of these cation/s is/are generally colourless?

(i) Fe^{2+} (ii) Na^{+} (iii) K^{+}

(iv) Cr^{3+} (v) Mg^{2+}

Select the correct option.

(a) (i) and (v) (b) (i), (ii) and (iv) (c) (ii) and (iv) (d) (ii), (iii) and (v)

Ans: d

19. Which of the following is wrongly matched?

(a) Permanganate MnO_4^{+} — Pink (b) Dichromate $Cr_2O_7^{2-}$ — Orange

(c) Chromate $Cr_2O_4^{2-}$ — yellow (d) Ferrous salts Fe^{2+} — Chalky white

Ans: d

20. Complete the equation with the option given below.

$$Zn(OH)_2 + 4NH_4OH \rightarrow \text{.....} + 4H_2O$$

(a) $ZnNH_4OH$ (b) $Zn(OH)_2$ (c) $(NH_4OH)_2Zn$ (d) $[Zn(NH_3)_4](OH)_2$

Ans: d