

CLASS X – SCIENCE – CHAPTER 03

METALS AND NON-METALS

Name:

Date:

CHOOSE THE CORRECT OPTION FROM QUES 1 TO 25

- Q01.** The earthy impurities associated with mineral used in metallurgy are called
(a) Slag (b) Flux (c) Gangue (d) Ore
- Q02.** A basic lining is given to a furnace by using
(a) Calcined dolomite (b) Copper sulphate (c) Haematite (d) Silica
- Q03.** Malachite is an Ore of:
(a) Iron (b) Copper (c) Mercury (d) Zinc
- Q04.** Metal always found in free state is:
(a) Gold (b) Silver (c) Copper (d) Sodium
- Q05.** A process employed for the concentration of sulphide ore is
(a) Forth floatation (b) Roasting (c) electrolysis (d) bessemerisation
- Q06.** The slag obtained during the extraction of copper pyrites is composed mainly of
(a) Cu_2S (b) FeSiO_3 (c) CuSiO_3 (d) SiO_2
- Q07.** The sulphide ore among the following is
(a) haematite (b) bauxite (c) argentite (d) zinc blende
- Q08.** Heating pyrites to remove sulphur is called
(a) Smelting (b) Calcination (c) Liquefaction (d) Roasting
- Q09.** Setting of Plaster of Paris takes place due to
(a) Solder (b) Bronze (c) Brass (d) Bell metal
- Q10.** Some crystals of CuSO_4 were dissolved in water. The colour of the solution obtained would be
(a) Green (b) Red (c) Blue (d) Brown
- Q11.** Most abundant metal on the surface of the earth
(a) Iron (b) Aluminium (c) Calcium (d) Sodium
- Q12.** Which of the following processes is used for the concentration of Bauxite ($\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$)?
(a) Froth floatation (b) Magnetic separation (c) Liquefaction (d) Leaching
- Q13.** During smelting, an additional substance is added which combines with impurities to form a fusible product. It is known as
(a) Slag (b) Mud (c) Gangue (d) Flux
- Q14.** In the thermite process, the reducing agent is
(a) Nickel (b) Zinc (c) Sodium (d) Aluminium
- Q15.** Which of the following oxides is amphoteric in nature?
(a) Na_2O (b) MgO (c) CaO (d) Al_2O_3
- Q16.** Iron nail clipped in a solution kept in a test tube. After half an hour it was observed that the colour of the solution was changed. The solution in test tube was that of:
(a) Zinc sulphate (b) Copper sulphate (c) Iron sulphate (d) $\text{Al}_2(\text{SO}_4)_3$

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- Q17.** A mineral is known as ore if metal
- (a) Cannot be produced from it (b) Can be produced from it
(c) Can be extracted from it profitably (d) Is very costly
- Q18.** The common method for extraction of metals from the oxide one is
- (a) Reduction with carbon (b) reduction with hydrogen
(c) reduction with aluminium (d) electrolytic method
- Q19.** Zone refining is used for the
- (a) concentration of an ore (b) Reduction of metal oxide
(c) Purification of metal (d) Purification of an ore
- Q20.** Chemically rust is
- (a) Hydrated ferrous oxide (b) Hydrated ferric oxide
(c) only ferric oxide (d) none of these
- Q21.** The lustre of a metal is due to
- (a) is high density (b) its high polishing
(c) its chemical inertness (d) Presence of free electrons.
- Q22.** In addition to iron, stainless steel contains:
- (a) nickel and chromium (b) Copper and tin
(c) aluminium and magnesium (d) Carbon and magnesium
- Q23.** The correct decreasing order of the metals in the activity series is:
- (a) Ca, Mg, Ni, Fe (b) Ni, Ca, Mg, Fe
(c) Ca, Mg, Fe, Ni (d) Mg, Ca, Fe, Ni
- Q24.** A student puts one big iron nail each in four test tubes containing solution of zinc sulphate, Aluminium sulphate, copper sulphate and iron sulphate. A reddish-brown coating was observed only on the surface of iron nail which was put in the solution of:
- (a) Zinc sulphate (b) Iron sulphate
(c) copper sulphate (d) Aluminium sulphate
- Q25.** An iron nail was suspended in CuSO_4 solution and kept for a while the solution is
- (a) Remained blue and coating was found on the nail.
(b) turned green and a coating was formed on the nail
(c) remained blue and no coating was formed on the nail
(d) turned green and no coating was formed on the nail

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- Q01.** Why do ionic compounds have high melting points?
- Q02.** Why sodium is kept immersed in kerosene oil?
- Q03.** State two ways to prevent the rusting of iron?
- Q04.** What type of oxides are formed when non-metals combine with oxygen?
- Q05.** What are amphoteric oxides? Give examples?
- Q06.** Name two metals which can displace hydrogen from dilute acids and two metals which cannot do so?
- Q07.** Why does copper not liberate hydrogen on reacting with dilute sulphuric acid?
- Q08.** Why are non-metals gaseous at room temperature?
- Q09.** Both calcium and magnesium are heavier than water but still float over it. Explain.
- Q10.** What is thermite reaction?
- Q11.** Why is titanium metal called as strategic metal? Mention 2 of its properties which makes it so special.
- Q12.** Metals are included in the reactivity series. Why hydrogen is kept in the series though it is not a metal?
- Q13.** Why are metals generally lustrous?
- Q14.** Corrosion of metals is not always harmful. Illustrate.
- Q15.** Why does copper not liberate hydrogen on reacting with dilute sulphuric acid?
- Q16.** Give reason why platinum, gold and silver are used to make jewellery.
- Q17.** Why copper is used to make hot water tanks and not steel?
- Q18.** Can all minerals of a metal act as ores? Justify.
- Q19.** How does Galvanisation check rusting of iron?
- Q20.** Which Gas is produced when a metal reacts with dilute hydrochloric acid? Write the chemical reaction when iron reacts with dilute H_2SO_4 .
- Q21.** What would you observe when Zinc is added to a solution of Iron (II) sulphate? Write chemical reaction that takes place.
- Q22.** Write any three differences between metals and non-metals on the basis of chemical properties?
- Q23.** Arrange the following metals in decreasing order of their reactivity:
- Cu, Ca, Mg, Na, Zn
 - You are provided with three metals: sodium, magnesium and copper, Using only water as the reactant, how will you identify each of them.
 - Which metal listed in (L) is most likely to occur in the native state?
- Q24.** Which method of concentration of ore is preferred in the following cases and why?
- The ore has higher density particles mixed with a large bulk of low-density impurities.
 - The ore consists of copper sulphide intermixed with clay particles. Give an example of amalgam.
- Q25.** (a) Why is ZnO called an amphoteric oxide? Name another amphoteric oxide.
(b) What are alkalis? Give example of alkalis.

DCA CLASSES

- Q26.** You are given is hammer a battery, a bulb, wires and switch.
(a) How could you use them to distinguish between samples of metals and non-metals?
(b) Assess the usefulness of these tests to distinguish between metals and non-metals.
- Q27.** (a) Name a metal which does not stick to glass?
(b) Name a non-metal which is good conductor of electricity?
(c) Name the metal which is commonly used in thermite welding?
(d) What is deposited at the cathode, a pure or impure metal?
(e) What is the nature of Zinc oxide?
- Q28.** Name an alloy of
(a) Aluminium used in construction of aircrafts
(b) lead in joining metals for electric work.
(c) copper used in house hold vessels
- Q29.** White three important properties of aluminium which are responsible for its great demand in industry?
- Q30.** Which of the following metals would give hydrogen when added to dilute HCL
(a) iron (b) copper and (c) magnesium
- Q31.** Define an alloy and an amalgam state the main constituents of the following alloys Stainless steel, Bronze. In which property is each of them different from its main constituent
- Q32.** Name the examples of three common forms in which metals occur is nature. How do these metals interact with dilute acid?
- Q33.** A group of a students looked at different metals and metal sulphate solutions given is a tabular form. From the data, answer the following:
- | Metal | Metal sulphate solution | Colour |
|---------------|--------------------------------|---------------|
| (a) Chromium | Chromium sulphate | Green |
| (b) Cobalt | Cobalt sulphate | Pink |
| (c) Copper | Copper sulphate | Blue |
| (d) Magnesium | Magnesium sulphate | Colourless |
- (a) Which metal reacted with all other sulphate solution?
(b) Which metal did not react with any other metal sulphate solution?
(c) Arrange the metals in decreasing order of reactivity.
- Q34.** (a) A metal that gets covered with a protective film of its oxide. (Al, Cu, Ag)
(b) A metal which burns in air with golden flame (Zn, K, Na)
(c) A metal which can displace hydrogen from boiling water as well as steam. (K, Zn, Fe)
- Q35.** Write one point of difference between electrolytic reduction and reduction with carbon. Give one example of each.
- Q36.** Write the equation for the reaction of
(a) Iron with steam (b) Calcium with water (c) Potassium with water

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Q37. Define the following terms:

(a) Minerals

(b) Ores

(c) Gangue

Q38. Pratyush took sulphur powder on a spatula and heated it. He collected the gas evolved by inverting a test tube over it. What will be the action of gas in

(a) Dry litmus paper?

(b) Moist litmus paper?

Write a balanced chemical equation for the reaction taking place?

Q39. (a) Write electron dot structure for sodium, magnesium and oxygen?

(b) Show formation of Na_2O and MgO by the transfer of electrons?

Q40. (a) What is corrosion? How is corrosion caused?

(b) Complete the reaction $2\text{Fe} + \frac{3}{2}\text{O}_2 + x\text{H}_2\text{O} \rightarrow$

Q41. (a) Choose metal from the reactivity series which will not react with steam.

(b) Choose one metal which will safely react with dilute sulphuric acid.

(c) Name the salt formed when you chose metal in (b) reacts with sulphuric acid.

Q42. A copper plate was dipped into a solution of AgNO_3 . After sometime a black layer was deposited on the copper plate. State the reason for it. Write the chemical equation for the reaction involved.

Q43. Hydrogen gas is evolved by reacting a piece of magnesium ribbon with water:

(a) Describe how could show that the gas collected is hydrogen.

(b) Write a symbol equation for the reaction taking place between magnesium and water.

(c) Suggest how the appearance of magnesium would change after a week.

(d) A few drops of universal indicator solution were added to water in the beaker. What colour would expect to see and what pH would this colour indicate?