Class 10 Science · Chapter 3: Metals and Non-metals

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. Temple bells and school bells are cast from metals and not from wood or plastic, chiefly because metals [1]

(a) are good conductors of heat
(b) are sonorous
(c) have high melting points
(d) are lustrous

2. An oxide Y dissolves in dilute hydrochloric acid and also in sodium hydroxide solution, and in each case a salt and water are formed. Y could be [1]

(a) MgO
(b) ZnO
(c) Na_2O
(d) CO_2

3. An electrician holds the bare end of a copper wire in a gas flame for a minute. The end does not burn but turns black. The black coating is [1]

(a) copper(II) oxide, CuO
(b) copper sulphide, Cu_2S
(c) basic copper carbonate
(d) soot from the flame

4. Sodium oxide is added to water. The equation for the change is [1]

(a) $Na_2O + H_2O \rightarrow 2NaOH$
(b) $Na_2O + H_2O \rightarrow 2Na + H_2O_2$
(c) $Na_2O + H_2O \rightarrow NaOH + H_2$
(d) $Na_2O + H_2O \rightarrow$ no reaction, as metal oxides are insoluble

5. Which statement about the allotropes of carbon is correct? [1]

(a) Diamond conducts electricity and graphite is the hardest natural substance.
(b) Both diamond and graphite conduct electricity.
(c) Diamond is the hardest natural substance and graphite conducts electricity.
(d) Diamond has a low melting point because it is a non-metal.

6. Element E has the electronic configuration 2, 8, 7. (a) Will E form a positive or a negative ion? Give a reason. (b) Write the configuration of the ion formed. [2]

7. An electrician says the copper core of a house wire must be covered with PVC. (a) Which property of copper makes it the core? (b) Why is PVC used for the cover? [2]

8. Mercury is obtained from its sulphide ore, cinnabar, by heating alone. Write the two balanced equations for the steps. [2]

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9. In a copper refinery, current is passed for several hours through a tank holding a thick plate of impure copper and a thin plate of pure copper in copper sulphate solution. The thick plate becomes thinner, the thin plate becomes thicker, and a sludge collects on the floor of the tank below the thick plate. (a) Which plate is the anode and which the cathode? (b) What is the sludge, and what does it contain? (c) What happens to the impurities that do not form the sludge? [3]

10. A white crystalline solid X shatters when hit with a hammer, melts only at a very high temperature, dissolves in water but not in petrol, and conducts electricity in solution but not as a dry solid. (a) What kind of compound is X? (b) Why is its melting point so high? (c) Why does it conduct in solution but not as a solid? [3]

11. A railway gang mends a gap between two rail ends by igniting a mixture of iron(III) oxide and aluminium powder in a mould over the joint. (a) Write the equation for the reaction. (b) Why does aluminium take the oxygen from iron(III) oxide? (c) Why does the iron run into the gap? [3]