Metals and Non-Metals

CHAPTER 3

TRY YOURSELF ANSWERS

1. Graphite is a non-metal which conducts electricity.

2. Lead is the poorest conductor of heat.

3. Gold and silver both are malleable and ductile.

4. Carbon (in the form of diamond) is the only non-metal which has very high melting point.

5. $Cu(NO_3)_{2(aq)} + Zn_{(s)} \longrightarrow Zn(NO_3)_{2(aq)} + Cu_{(s)}$

6.

Properties	Metals	Non-metals
Nature of oxides	Metals mostly form basic oxides. Some metals such as Zn and Al form amphoteric oxides.	Non-metals form either acidic or neutral oxides.
Reaction with water	Most of the metals displace hydrogen from water or steam.	Non-metals (except fluorine) generally do not react with water or steam.
Reaction with dilute acids	Metals which lie above hydrogen in the reactivity series displace hydrogen from dilute acids.	Non-metals do not react with dilute acids and hence, do not displace hydrogen from dilute acids.
Nature of hydrides	Highly electropositive elements (*i.e.*, K, Na, Ca, etc.,) react with hydrogen to form ionic hydrides which are generally unstable.	Non-metals form covalent hydrides which are quite stable.
Nature of chlorides	Metals generally combine with chlorine to form solid ionic chlorides which conduct electricity in the aqueous solution or in the molten state.	Non-metals combine with chlorine to form covalent chlorides. These are either gases or liquids. Non-metal chlorides do not contain ions, therefore, they do not conduct electricity.
Oxidizing and reducing behaviour	Metals have a strong tendency to lose electrons and hence they behave as reducing agents.	Non-metals have a strong tendency to accept electrons and hence they behave as oxidizing agents.

7. (a) This reaction will not occur because copper is less reactive than magnesium. Hence, it can not displace magnesium from its salt solution.

(b) This reaction will take place as iron is more reactive than copper. Hence, it can displace copper from its salt solution.

(c) This reaction will not take place because iron is less reactive than magnesium. Hence, it can not displace magnesium from its salt solution.

8. Ionic compounds in the solid state do not conduct electricity because movement of ions in solid state is not possible due to the rigid structure. But they conduct electricity in the molten state as the electrostatic forces of attraction between oppositely charged ions are overcome by heat and ions become free to move.

9. (i) Ionic bond (ii) Covalent bond (iii) Covalent bond

10. Ionic compounds : sodium chloride, ammonium chloride and magnesium chloride.

Covalent compounds : urea, cane sugar, hydrogen chloride, carbon tetrachloride, ammonia and alcohol.

11. Copper and silver

12. Ore of iron - Haematite (Fe_2O_3)
Ore of copper - Cuprite (Cu_2O)

13. (a) Zinc (b) Aluminium (c) Manganese

14. Electrolytic reduction method.

15. This is because on exposure to air, the surface of aluminium is coated with a thin layer of aluminium oxide.

16. Gold ornaments do not undergo corrosion easily.

17. Constituents of brass : Copper (80%) and zinc (20%).
Uses : For making utensils, screws, nuts and bolts.

18. Solder - Lead (50%) and Tin (50%).

19. Steel - Iron (99.95%) and Carbon (0.05%).

20. An alloy which does not contain iron as one of the constituents is called a non - ferrous alloy.

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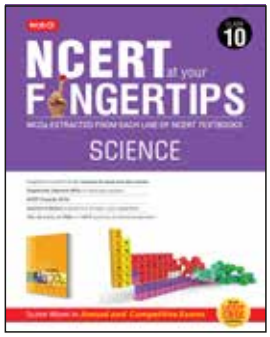

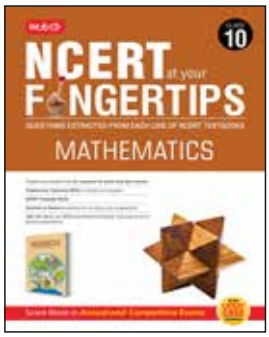

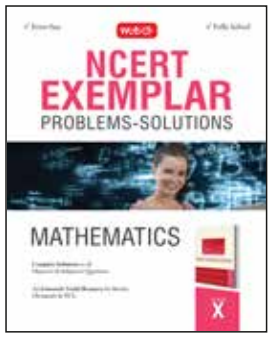

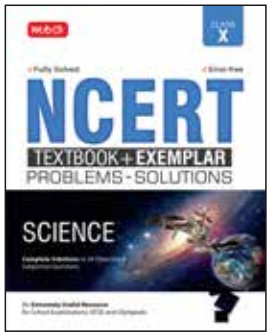

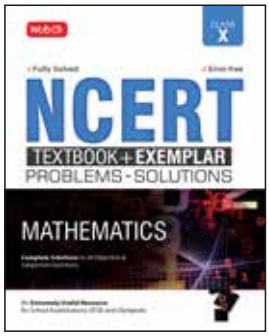

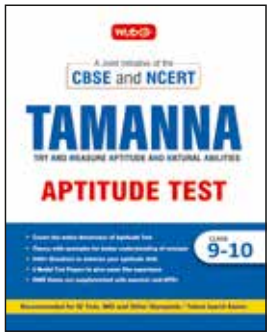

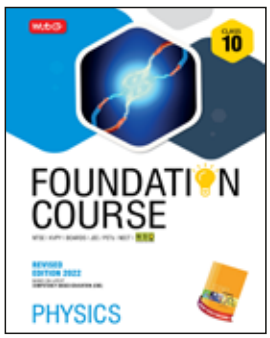

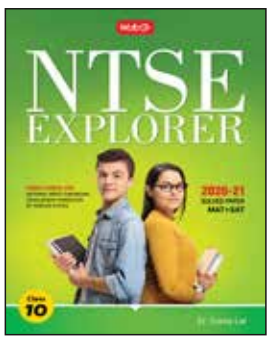

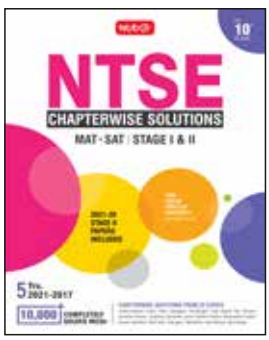

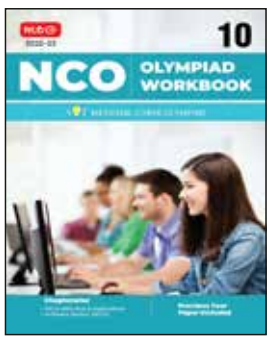

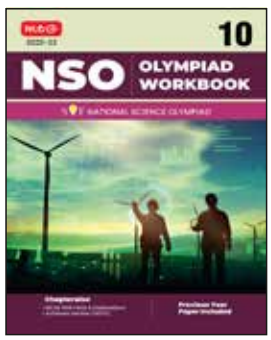

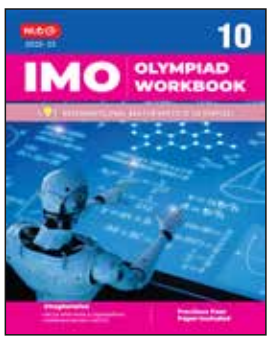

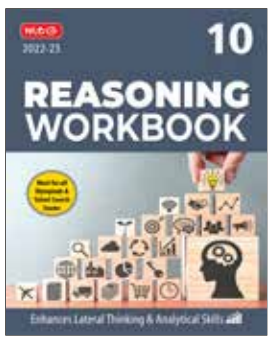

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