CHEMISTRY

NCERT - NCERT CHEMISTRY(ENGLISH)

METALS AND NON-METALS

Exercise

1. Explain the meaning of malleable and ductile.

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2. Why is sodium kept immersed in kerosene oil?

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3. Write equations for the reactions of

(i) iron with steam

(ii) calcium and potassium with water

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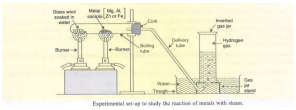
4. Samples of four metals A, B, C and D were taken and added to the following solution one by one. The results obtained have been tabulated as follows.



Experimental set-up to study the reaction of metals with steam.

Use the Table above to answer the following questions about metals A, B, C and D.

(i) Which is the most reactive metal?

(ii) What would you observe if B is added to a solution of Copper (II) sulphate?

(iii) Arrange the metals A, B, C and D in the order of decreasing reactivity.

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5. Which gas is produced when dilute hydrochloric acid is added to a reactive metal? Write the chemical reaction when iron reacts with dilute H_2SO_4.

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6. What would you observe when zinc is added to a solution of iron (II) sulphate?

Write the chemical reaction that takes place.

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7. (i) Write the electron-dot structures for sodium, oxygen and magnesium.

(ii) Show the formation of Na_2O and M_gO by the transfer of electrons.

(iii) What are the ions present in these compounds?

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8. Why do ionic compounds have high melting points?

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9. Define the following terms.

(i) Mineral

(ii) Ore

(iii) Gangue

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10. Name two metals which are found in nature in the free state.

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11. What chemical process is used for obtaining a metal from its oxide?

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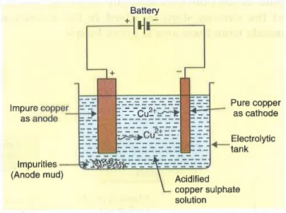
12. Metallic oxides of zinc, magnesium and copper were heated with the following metals.



Experimental set up for the electrolytic refining of copper.

In which cases will you find displacement reactions taking place?

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13. Which metals do not corrode easily?

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14. What are alloys?

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15. Which of the following pairs will give displacement reactions?

(i) $NaCl$ solution and copper metal

(ii) $MgCl_2$ solution and aluminium metal

(iii) $FeSO_4$ solution and silver metal

(iv) $AgNO_3$ solution and copper metal

A. $NaCl$ solution and copper metal

B. $MgCl_2$ solution and aluminium metal

C. $FeSO_4$ solution and silver metal

D. $AgNO_3$ solution and copper metal.

Answer:

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16. Which of the following methods is suitable for preventing an iron frying pan from rusting?

(a)Applying grease

(b) Applying paint

(c) Applying a coating of zinc

(d) All of the above

A. Applying grease

B. Applying paint

C. Applying a coating of zinc

D. All of the above

Answer: C

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17. An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be

(a) calcium

(b) carbon

(c) silicon

(d) iron

A. calcium

B. carbon

C. silicon

D. iron

Answer:

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18. Food cans are coated with tin and not with zinc because

(a) zinc is costlier than tin.

(b) zinc has a higher melting point than tin.

(c) zinc is more reactive than tin.

(d) zinc is less reactive than tin

A. zinc is costlier than tin.

B. zinc has a higher melting point than tin.

C. zinc is more reactive than tin.

D. zinc is less reactive than tin.

Answer:

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19. You are given a hammer, a battery, a bulb, wires and a switch.

(a) How could you use them to distinguish

between samples of metals and non-metals?

(b) Assess the usefulness of these tests in distinguishing between metals and non – metals.

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20. What are amphoteric oxides? Give two examples of amphoteric oxides.

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21. Name two metals which will displace hydrogen from dilute acids, and two metals which will not.

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22. In the electrolytic refining of a metal M, what would you take as the anode, the cathode and the electrolyte?

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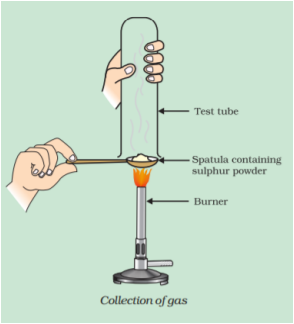
23. Pratyush took sulphur powder on a spatula and heated it. He collected the gas evolved by inverting a test tube over it, as shown in figure below.



(a) What will be the action of gas on

(i) dry litmus paper?

(ii) moist litmus paper?

(b) Write a balanced chemical equation for the reaction taking place.

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24. State two ways to prevent the rusting of iron.

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25. What type of oxides is formed when non-metals combine with oxygen?

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26. Give reasons

(a) Platinum, gold and silver are used to make jewellery.

(b) Sodium, potassium and lithium are stored under oil.

(c) Aluminium is a highly reactive metal, yet it is used to make utensils for cooking.

(d) Carbonate and sulphide ores are usually converted into oxides during the process of extraction.

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27. You must have seen tarnished copper vessels being cleaned with lemon or tamarind juice. Explain why these sour substances are effective in cleaning the vessels.

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28. Differentiate between metal and non-metal on the basis of their chemical properties.

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29. A man went door to door posing as a goldsmith. He promised to bring back the glitter of old and dull gold ornaments. An unsuspecting lady gave a set of gold bangles to him which he dipped in a particular solution. The bangles sparkled like new but their weight was reduced drastically. The lady was upset but after a futile argument the man beat a hasty retreat. Can you play the detective to find out the nature of the solution he had used?

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30. Give reasons why copper is used to make hot water tanks and not steel (an alloy of iron).

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