



# CHEMISTRY

## BOOKS - CAMBRIDGE CHEMISTRY (KANNADA ENGLISH)

### METALS AND NON-METALS

#### Questions

1. Give an example of a metal which  
(i) is a liquid at room temperature.

(ii) can be easily cut with a knife.

(iii) is the best conductor of heat.

(iv) is a poor conductor of heat.



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2. Explain the meanings of malleable and ductile.



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3. Why is sodium kept immersed in kerosene oil ?



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4. Write equations for the reactions.

(i) Iron with steam

(ii) Calcium and potassium with water



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

Metals	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	(Silver Nitrate)
A	No reaction	Displacement	-	-
B	Displacement	-	No reaction	-
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

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

(i) Which is the most reactive metal ?

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



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6. Which gas is produced when dilute hydrochloric acid is added to reactive metal ?

Write the chemical reaction when iron reacts with dilute  $H_2SO_4$ .



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7. 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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8. (i) Write the electron dot structure for sodium, oxygen and magnesium.

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

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



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**9.** Why do ionic compounds have high melting points ? State reason.



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**10.** Define the following terms.

(i) Mineral (ii) ore (iii) Gangue



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**11.** Name two metals which are found in nature in a free state.



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



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**13.** Which metals do not corrode easily ?





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14. What are alloys ?



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## Exercise

1. Which of the following pairs 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 solution

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: d**



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2. Which of the following method is suitable preventing an iron frying pan from rusting

A. Applying grease

B. Applying paint

C. Applying a coating of zinc

D. All of the above

**Answer: c**



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

A. Calcium

B. Carbon

C. Silicon

D. Iron

**Answer: a**



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4. 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

**Answer: c**



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5. You are given 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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7. What are amphoteric oxides ? Give examples.



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



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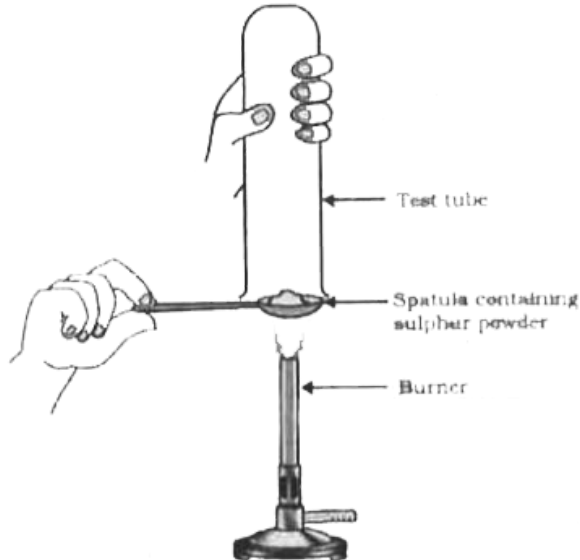


**9.** In the electrolyte refining of a metal M, what would take the anode, the cathode and the electrolyte ?



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**10.** 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.



*Collection of gas*

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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**11.** State two ways to prevent the rusting of iron.



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**12.** What type of oxides are formed when non-metals combine with oxygen ?



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**13.** 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 sulphate ores are usually converted into oxides during metal extraction.



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**14.** Give reason: Sodium, potassium and lithium are stored under oil.



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**15.** 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 sulphate ores are usually converted into oxides during metal extraction.



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**16.** Give reason : Carbonate and Sulphide ores are usually converted into oxides during the process of extraction.



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**17.** You must have been seen tarnished copper vessels being cleaned with lemon or tamarind juice. Explain why those sour substances are effective in cleaning the vessel.



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**18.** Differentiate between metal and non-metal on the basis of chemical properties.



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19. 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 had a hasty retreat. Can you play the detective to find out the nature of the solution he had used ?



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



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## Additional Questions Choose The Correct Answer

1. Which of the following is not half metal.

A. Silicon

B. Boron

C. Arsenic

D. Chlorine

**Answer: D**



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2. Which of the following non metal is good conductor of electricity .

A. Graphite

B. Phosphorous

C. Hydrogen

D. Bromine

**Answer: A**



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**3. Which non metallic element is in liquid form.**

A. Carbon

B. Hydrogen

C. Bromine

D. Phosphorus

**Answer: C**



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**4.** By which reaction metal is obtained from metal oxide

A. Liquification

B. Reduction

C. Calcination

D. Roasting

**Answer: B**



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5. Which of these are more reactive?

A. Hg

B. Al

C. Ag

D. Ca

**Answer: D**



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**6. What are the constituents of solder alloy ?**

Which property of solder makes it suitable for welding electrical wires ?

A. copper, zinc

B. copper, tin

C. lead, zinc

D. lead, tin

**Answer: D**



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**7. Hematite is an ore of**

A. Iron

B. Aluminium

C. Copper

D. Tin

**Answer: A**



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**8. Bauxite is an ore of which metal**

A. Iron

B. Aluminium

C. Copper

D. Tin



**Answer: B**



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**9.** In general the number of electrons in the outermost shell of a metal atom is

A. 1

B. 1 to 3

C. 5 to 8

D. 8

**Answer: B**



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**10.** Which of the following is the best electrical conductor?

A. Gold

B. Silver

C. Copper

D. Aluminium

**Answer: B**



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## Additional Questions Answer The Following

1. What is an ore ?



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2. What are Metalloids ? Give examples ?





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3. Are metals electropositive or electronegative? State reason also



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4. Define galvanising.



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5. Define ionic compounds. Ionic compounds conduct electricity only in the molten state and not in solid state. Why ?



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6. Name five ways to prevent rusting .



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7. What are noble metals?



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**8.** State three reasons for the following facts:

a. Sulphur is a non metal.

b. Magnesium is a metal.



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**9.** What is cinnabar ? How is a metal extracted from cinnabar ? Explain briefly.



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**10.** Give two examples of ore of aluminium?



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**11.** Why do potato - chips manufactures fill the packest of chips with nitrogen gas ?



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**12.** What is gangue and what is concentration?





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**13. a.** Write electron dot diagram for chlorine (At No. 17) and Calcium (At No 20) show the formation of Calcium chloride by transfer of electrons.



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**14.** Identify the nature of above compound and explain three physical properties of such compound.





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**15.** Give reasons for the following :

- (i) School bells are made up of metals.
- (ii) Electrical wires are made up of copper.



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- (i) School bells are made up of metals.
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17. What are amphoteric oxides? Choose the amphoteric oxide from among the following oxides:

$Na_2O$ ,  $ZnO$ ,  $Al_2O_3$ ,  $CO_2$ ,  $H_2O$



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18. Differentiate between roasting and calcination.

Explain the two with the help of suitable

chemical equations. How is zinc extracted from its ore?



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**19.** Name two metals that can be used to reduce metal oxides of metals.



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**20.** State reasons for the following:

Electric wires are covered with rubber like

material.



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21. Which of the following metals cannot liberate hydrogen from dilute hydrochloric acid



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22. State reasons for the following:

Sulphide ore of a metal is first converted to its

oxide to extract the metal from it.



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**23.** Write any four physical properties of metals.



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**24.** Give examples of the least reactive metals.



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**25.** Sodium and chlorine are poisonous substances but sodium chloride is edible. State reason.



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**26.** Write balanced equations for the reactions of:

(i) Aluminium when heated in air. Write the name of the product.

(ii) Iron with steam. Name the product

obtained.

(iii) Calcium with water. Why does calcium start floating in water ?



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**27.** Write balanced chemical equation for the reaction of:

a. Al when heated in air, write the name of the product.

b. Fe with steam, name the product obtained.

c. Ca with water, why does calcium start floating on water?



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**28.** Write balanced equations for the reactions of:

(i) Aluminium when heated in air. Write the name of the product.

(ii) Iron with steam. Name the product obtained.



(iii) Calcium with water. Why does calcium start floating in water ?



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**29.** (i) Explain the formation of ionic compound  $\text{CaO}$  with electron dot structure. Atomic number of calcium and oxygen are 20 and 8 respectively.

(ii) Name the constituent metals of bronze.



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**30.** Name the constituent metals of bronze.



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**31. a.** Give two methods to prevent the rusting of iron

**b.** Name the ores of the following metals.

1. Mercury and

2. Zinc.

**c.** Explain with the help of diagram, how copper metal can be refined? Label the

important arrangement in the experiment set up.



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**32.** You are provided with magnesium ribbon and sulphur powder. Explain with the help of an activity that metal oxides are basic and non metal oxide are acidic in nature.



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1. What are noble metals?



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2. Give reasons for the following :

(i) School bells are made up of metals.

(ii) Electrical wires are made up of copper.



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3. Give examples of the least reactive metals.



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c. School bells are made up of metals.



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