



## CHEMISTRY

### BOOKS - TARGET CHEMISTRY (HINGLISH)

## GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

### Classical Thinking

1. Which metal is found in free state ?

A. Iron

B. Platinum

C. Aluminium

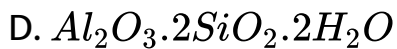
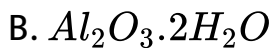
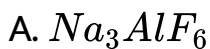
D. Sodium

**Answer: B**



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2. The chemical formula of bauxite is



**Answer: B**



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3. Which is the mineral of iron ?

A. Dolomite

B. Limonite

C. Malachite

D. Willemite

**Answer: B**



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4. Which of the following statement is NOT correct ?

- A. All ores are minerals
- B. All minerals are ores
- C. All ores contain gangue.
- D. A metal may occur in several minerals.

**Answer: B**



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5. The earthy impurities present in the mineral are called

- A. slag
- B. mineral
- C. gangue

D. flux

**Answer: C**



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6. A process of extracting metals from aqueous solutions of their salts using suitable reducing agents is called \_\_\_\_\_.

A. pyrometallurgy

B. hydrometallurgy

C. electrometallurgy

D. catalytic reduction

**Answer: B**



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7. Wilfley's table method for the concentration of an ore can be used when \_\_\_\_\_.

- A. gangue particles are heavier than the ore particles
- B. ore particles are heavier than the gangue particles
- C. ore particles are magnetic in nature
- D. gangue particles are magnetic in nature

**Answer: B**



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8. Which of the following is used as a foaming agent in froth floatation process ?

A. Pine oil

B. Sodium cyanide

C. Copper sulphate

D. Potassium cyanide

**Answer: A**



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9. Name the substance used as depressant in the separation of two sulphide ores in Froth floatation

method.

- A. proportion of oil to water is adjusted
- B. depresssants are added
- C. collectors are added
- D. either (A) and (B)

**Answer: D**



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**10.** In order to bring initial chemical change in the ore, the process of heating of ore below its melting point in the presence of excess of air is known as \_\_\_\_\_.

- A. reduction



B. smelting

C. calcination

D. roasting

**Answer: D**



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**11.** The common method for the extraction of metals from oxide ores involves \_\_\_\_\_.

A. reduction with carbon

B. reduction with aluminium

C. reduction with hydrogen

D. electrolytic method

**Answer: A**



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**12.** In metallurgical processes the flux used for removing acidic impurities is

A. silica

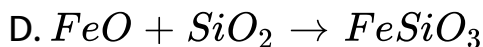
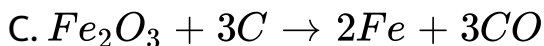
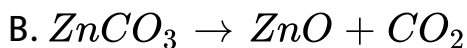
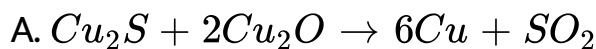
B. sodium chloride

C. limestone

D. sodium carbonate

**Answer: A**

13. A reaction showing slag formation is \_\_\_\_\_.



**Answer: D**

14. For the formation of metal oxide,  $\delta G^\circ$  \_\_\_\_\_ with increase in temperature.

- A. increases
- B. decreases
- C. remains constant
- D. none of these

**Answer: A**



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15. In the Ellingham diagram , graph for the formation of  $CO_2$ \_\_\_\_\_.

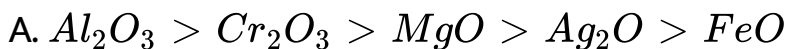
- A. is a straight line with the negative slope
- B. is a straight line with the positive slope
- C. is a straight line almost parallel to temperature axis
- D. is a curved line with sudden change in the slope

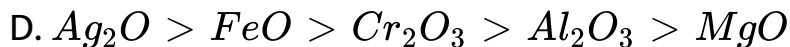
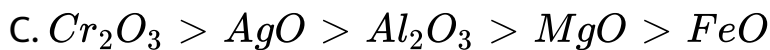
**Answer: C**



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**16.** Which of the following is the CORRECT decreasing order of the stabilities of the following metal oxides on the basis of Ellingham diagram ?





**Answer: B**



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17. For the reduction of oxides of chromium, carbon can be used as reducing agent but this is not observed in practice because \_\_\_\_\_.

A. high temperatures are required

B. chromium forms corresponding carbide under the reaction conditions

C. chromium forms corresponding carbonated under the reaction conditions

D. both (A) and (B)

**Answer: D**



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**18.** Which of the following metals can be separated from their crude form by liquation ?

A. Bi

B. Ge

C. Ni

D. All of these

**Answer: A**



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**19.** Tin and lead can be refined by \_\_\_\_\_.

A. zone refining

B. liquation

C. electrolytic refining

D. vapour phase refining

**Answer: B**



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20. Liquation process is carried out using \_\_\_\_\_.

- A. blast furnace
- B. hydraulic classifier
- C. reverberatory furnace
- D. Wilfley's washing table

**Answer: C**



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21. Pig tin is obtained by \_\_\_\_\_.

- A. liquation process

B. zone refining

C. polling

D. vapour phase refining

**Answer: A**



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**22.** Polling process is used in purifying \_\_\_\_\_.

A. Hg

B. Fe

C. Cu

D. Ag

**Answer: C**



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**23.** During polling, heat of molten metal makes the green logs of wood to liberate \_\_\_\_\_.

- A. sulphur dioxide
- B. carbon dioxide
- C. carbon monoxide
- D. hydrocarbon gases

**Answer: D**



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**24.** Which of the following is required during electrolytic refining ?

- A. Electrolytic bath containing soluble salt of same metal
- B. Impure metal as cathode
- C. Strip of pure metal as anode
- D. All of these

**Answer: A**



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**25.** Purification of Silicon element used in semiconductors is done by \_\_\_\_\_.

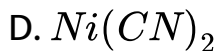
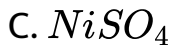
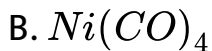
- A. zone refining
- B. chromatography
- C. froth floatation
- D. electrolysis

**Answer: A**



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**26.** The volatile complex formed in Mond process during refining of nickel is \_\_\_\_\_.



**Answer: B**



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**27. Which of the following is used in van Arkel method ?**



D. CO

**Answer: C**



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**28.** Chromatography is based on the principle of selective \_\_\_\_\_.

A. absorption

B. adsorption

C. wettability

D. evaporation

**Answer: B**



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29. In column chromatography , the mixture whose different components are to be separated is dissolved in \_\_\_\_\_.

A. stationary phase

B. mobile phase

C. eluents

D. alumina

**Answer: B**



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**30.** The concentrated ore containing trace elements can be best purified by \_\_\_\_\_.

- A. electrolytic refining
- B. vapour phase refining
- C. zone refining
- D. chromatography

**Answer: D**



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**31.** The most abundant ore of Zn is \_\_\_\_\_.

- A. zinc blende

B. calamine

C. zincite

D. willemite

**Answer: A**



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**32.** Zinc blende ore can be concentrated by \_\_\_\_\_.

A. gravity separation

B. electromagnetic separation

C. froth floatation process

D. All of these

**Answer: D**



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**33.** The vertical retort is made up of \_\_\_\_\_ bricks.

A. silicon hydride

B. silicon carbide

C. zinc carbide

D. zinc hydride

**Answer: B**



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34. Briquettes used in modern vertical retort process are made up of \_\_\_\_\_.

- A.  $ZnSO_4$  (40 %) + clay (60%)
- B.  $ZnO$  (40 %) + coke/charcoal (60%)
- C.  $ZnS$  (40%) + coke/charcoal (60%)
- D.  $ZnS$  (40%) + clay (60%)

**Answer: B**



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35. Zinc spelter contains \_\_\_\_\_ of zinc.

- A. 95 % to 99 %

B. 97% to 98%

C. 99% to 100%

D. 90% to 95%

**Answer: B**



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**36.** During electrolytic refining of zinc, anode and cathode used are made up of \_\_\_\_\_.

A. aluminium and lead

B. lead and aluminium

C. lead and graphite

D. aluminium and graphite

**Answer: B**



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**37.** Colour of solid zinc is \_\_\_\_\_.

A. reddish brown

B. green

C. silvery white

D. bluish white

**Answer: D**



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38.  $FeS_2$  is \_\_\_\_\_.

A. magnetite

B. pyrite

C. limestone

D. haematite

**Answer: B**



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39. Which of the following mineral of iron has the highest sulphur content ?

A. Siderite

B. Magnetite

C. Iron pyrites

D. Limonite

**Answer: C**



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**40.** Pig iron\_\_\_\_\_.

A. is the iron containing the carbon and other impurities

B. is a pure form of iron



C. is similar to wrought iron

D. is similar to steel

**Answer: A**



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**41.** The purest form of iron is \_\_\_\_\_.

A. pig iron

B. wrought iron

C. steel

D. All of these

**Answer: B**



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**42.** Flux added in the extraction of iron is

- A. silica
- B. Feldspar
- C. limestone
- D. Alumina

**Answer: C**



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**43.** Manufacture of cast iron is done in \_\_\_\_\_.

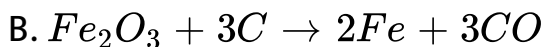
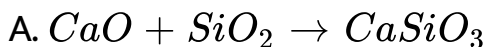
- A. blast furnace
- B. bessemer converter
- C. reverberatory furnace
- D. modern vertical retort

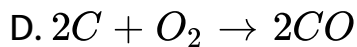
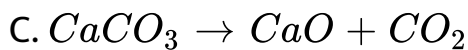
**Answer: A**



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**44.** In extraction of iron, the reaction taking place in the blast furnace at around 2000 K is ,\_\_\_\_\_.



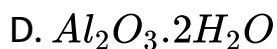
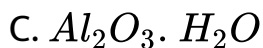
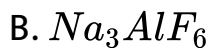
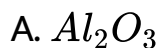


**Answer: D**



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45. Diaspore is \_\_\_\_\_.



**Answer: C**



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46. Hall's process is used for purification of \_\_\_\_\_.

- A. white bauxite
- B. red bauxite
- C. iron aluminate
- D. cryolite

**Answer: B**



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47. The substance used in the thermite process for reducing metal oxide is \_\_\_\_\_.

- A. aluminium
- B. thorium
- C. heated Pt gangue
- D. carbon

**Answer: A**



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48. Sapphire is a valuable precious stone containing\_\_\_\_\_.

A. Cu

B. Zn

C. Al

D. Mg

**Answer: C**



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**49.** Which of the following minerals does NOT contain copper ?

A. Malachite

B. Cuprite

C. Azurite

D. Corundum

**Answer: D**



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**50.** During smelting of copper pyrites, the charge which is introduced in the blast furnace consists of \_\_\_\_\_.

A. roasted ore , coke and sand

B. roasted ore, coke and limestone

C. roasted ore, coke and quick lime

D. roasted ore, coke and sodalime



**Answer: A**



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51. When molten copper is cooled slowly, blister copper is obtained because \_\_\_\_\_ gas comes out .

- A. sulphur dioxide
- B. carbon dioxide
- C. carbon monoxide
- D. oxygen

**Answer: A**



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52. \_\_\_\_\_ is necessary to obtain purest form of copper metal.

- A. carbon reduction
- B. hydrogen reduction
- C. Electrolytic process
- D. Thermite process

**Answer: C**



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53. In hydrometallurgy of copper, iron scrap is used instead of zinc scrap because \_\_\_\_\_.

- A. cost of zinc scrap is comparatively higher than the iron scrap
- B. zinc scrap is not easily available
- C. handling of zinc scrap is dangerous
- D. iron is more reactive metal compared to zinc.

**Answer: A**



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## Critical Thinking

1. Naturally occurring substances from which a metal can be profitably (or economically ) extracted are called \_\_\_\_\_.

A. minerals

B. ores

C. gangue

D. salts

**Answer: B**



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**2.** Some of the common steps involved in the metallurgical operations are

I. refining

II. Dressing of the ore

III. Conversion of the ore into its oxides or other desired compounds.

Choose the CORRECT order in which these steps are carried out.

A. III , II , I

B. I , II, III

C. II, III , I

D. II, I, III

**Answer: C**



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3. Ore dressing is the process, in which \_\_\_\_\_.

A. ore size is reduced to required size

- B. drying of ore takes place
- C. removal of gangue material takes place
- D. treating the ore with alkali

**Answer: C**



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4. Cassiterite is concentrated by \_\_\_\_\_.

- A. froth -floatation
- B. magnetic seperation
- C. gravity seperation
- D. electrostatic seperation

**Answer: B**



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5. Froth floatation process is based on \_\_\_\_\_.

- A. wetting properties of
- B. specific gravity of
- C. magnetic properties of
- D. electrical properties of

**Answer: A**



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6. Froth floatation process for the concentration of ores is an illustration of the practical application of \_\_\_\_\_.

A. adsorption

B. absorption

C. coagulation

D. sedimentation

**Answer: A**



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7. Which of the following metals is obtained by leaching out process using a solution of  $NaCN$  and then precipitating the metal by addition of zinc dust?



A. Copper

B. Silver

C. Nickel

D. Iron

**Answer: B**



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**8.** Roasting is a process in which ores are heated in the \_\_\_\_\_.

A. absence of air

B. excess supply of air

C. limited supply of air

D. presence of carbon

**Answer: B**



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**9. The role of calcination in metallurgical operation is**

A. remove moisture

B. decompose carbonate

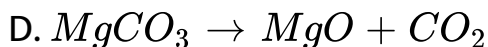
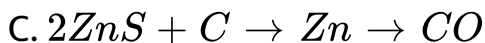
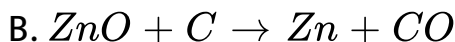
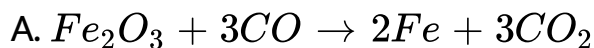
C. drive off organic matter

D. All of these

**Answer: D**

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10. Which one of the following reactions is an example for calcination process ?



**Answer: D**

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11. The process of calcination is generally carried out in case of \_\_\_\_\_.

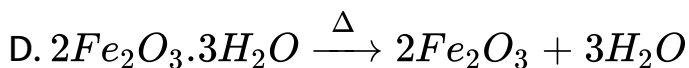
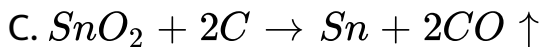
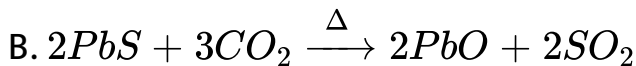
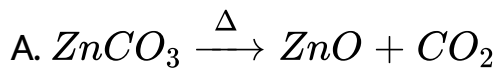
- A. sulphide ores only
- B. carbonate ores and sulphide ores
- C. hydrated oxides and carbonate ores
- D. hydrated oxides and sulphide ores

**Answer: C**



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12. Which of the following reactions involves the smelting process ?



**Answer: C**



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**13.** In metallurgy , flux is a substance used to convert\_\_\_\_\_.

A. gangue to fusible slag

B. soluble impurities to soluble impurities

C. fusible impurities to infusible material

D. mineral into silicate

**Answer: A**



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**14. Which of the following is NOT an alkaline flux ?**

A.  $MgCO_3$

B. CaO

C.  $SiO_2$

D.  $CaCO_3$

**Answer: C**



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15. Specific gravity of slag is

- A. always higher than molten metal
- B. always less than molten metal
- C. same as molten metal
- D. varies according to molten metal

**Answer: B**



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16. For the formation of carbon dioxide ,  $\Delta G^\circ$  \_\_\_\_\_.

- A. increases with the increase in temperature
- B. decreases with the decrease in temperature
- C. does not vary much with the temperature
- D. none of these

**Answer: C**



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17. For the temperature at which  $C \rightarrow CO$  line lie below the metal oxide line in the Ellingham diagram, \_\_\_\_\_ can be used to reduce the metal oxide.

- A. carbon
- B. carbon dioxide



C. carbon monoxide

D. All of these

**Answer: A**



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**18.** A newly discovered metal 'M' was found to have its graph of formation of oxide above the graph line of silver, in the Ellingham diagram, this indicates that \_\_\_\_\_.

A. metal 'M' can be easily decomposed at moderate temperature

B. metal 'M' can be reduced using silver

C. silver can be reduced using metal 'M'

D. both (A) and (B)

**Answer: D**



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**19.** Which of the following statements is INCORRECT on the basis of Ellingham diagram ?

- A. Below 1000 K , CO can reduce  $Fe_2O_3$  to Fe.
- B. Below 1000 K ,  $CO_2$  is more stable than CO.
- C. Below 1000K , carbon cannot reduce  $Al_2O_3$  to Al.
- D. Above 1000 K, CO is less stable than  $CO_2$

**Answer: D**



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20. Liquation process for refining of crude metal is used when \_\_\_\_\_.

- A. impurity has higher melting point than metal
- B. impurity forms volatile compound with the reagent
- C. impurity has lower melting point than metal
- D. impurities are more soluble in molten liquid than in the solid

**Answer: A**



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21. During the process of polling , \_\_\_\_\_.

A. metal carbonates are reduced to metals

B. metal nitrates are reduced to metals

C. metal sulphates are reduced to metals

D. metal oxides are reduced to metals

**Answer: D**



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22. The fact that impurities are more soluble in the molten state than in the sold of the metal is used in \_\_\_\_\_.

A. liquation process

B. distillation

C. fractional crystallization

D. polling

**Answer: C**



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**23.** Inert atmosphere of argon is used during ozone refining to prevent\_\_\_\_\_.

A. thermal decomposition of the metal

B. thermal reduction of the metal

C. oxidation of the metal

D. reduction of metal oxide

**Answer: C**



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**24.** Gallium arsenide is purified by \_\_\_\_\_.

A. froth floatation process

B. van Arkel method

C. zone-refining method

D. electrolytic method

**Answer: C**



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**25.** Which of the following impurities are removed in van Arkel method ?

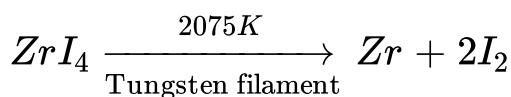
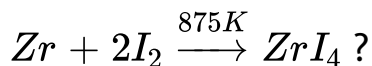
- A. Carbon monoxide
- B. Silica
- C. Oxygen and nitrogen
- D. Hydrogen

**Answer: C**



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26. Which method of purification is represented by following equations ?



A. zone refining

B. Van Arkel

C. polling

D. Liquation

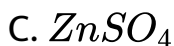
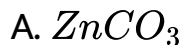
**Answer: B**



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27. During roasting of concentrated zinc sulphide ore, which of the following gets formed ?



D. both (B) and (C)

**Answer: D**



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28. Roasting of concentrated zinc sulphide ore is completed at the temperature of 1200 K to \_\_\_\_\_.

- A. ensure complete decomposition of  $ZnSO_4$  to ZnO
- B. ensure complete melting of zinc
- C. ensure evaporation of the volatile impurities
- D. All of these

**Answer: A**



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**29.** Which of the following is INCORRECT regarding modern vertical retort process ?

- A. It is a commercial , economical and continuous process.

B. It has roll discharge mechanism.

C. It involves oxidation of metal at high temperature of about 1673 K.

D. The heating jacket is heated by burning producer gas.

**Answer: C**



**View Text Solution**

**30.** Iron exhibits property of ferromagnetism\_\_\_\_\_.

A. above 1800K

B. at 1800 K

C. below 1042 K

D. above 1042 K

**Answer: C**



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**31.** In metallurgy of iron, charge introduced in the blast furnace consists of \_\_\_\_\_.

A. roasted ore, silica and calcium hydroxide

B. roasted ore, coke and calcium hydroxide

C. roasted ore, coke and calcium carbonate

D. roasted ore, coke and calcium silicate

**Answer: C**



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**32.** In the cup and cone arrangement of blast furnace, the cone enables \_\_\_\_\_.

- A. introduction of pre-heated air into the furnace
- B. prevention of loss of gases
- C. uniform ditribution of charge
- D. removal of molten slag

**Answer: C**



**View Text Solution**

**33.** In the metallurgy of iron, when limestone is added to the blast furnace, the calcium ions end up in

- A. slag
- B. gangue
- C. metallic Ca
- D. calcium carbonate

**Answer: A**



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**34.** The smelting of iron in the blast furnace involves all the following processes EXCEPT \_\_\_\_\_

- A. oxidation
- B. reduction
- C. decomposition
- D. sublimation

**Answer: D**



**View Text Solution**

**35.** Which of the following reactions does NOT occur in blast furnace ?

- A. Combustion of coke with oxygen from the hot air.
- B. Conversion of ferrous oxide into ferric oxide.

C. Reduciton of ferric oxide to iron

D. Formation of slag by reaction between limestone and impurities like alumina , silica etc.

**Answer: B**



**View Text Solution**

**36. Which of the following is NOT a mineral of aluminium ?**

A. Cryolite

B. Diaspore

C. Corundum

D. Azurite

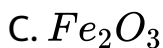
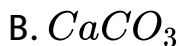
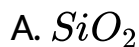


**Answer: D**



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**37.** Baeyer's process is used for the purification of bauxite containing \_\_\_\_\_ as chief impurity .

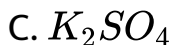
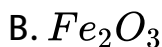


**Answer: C**



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38. The chief impurity present in bauxite is



**Answer: B**

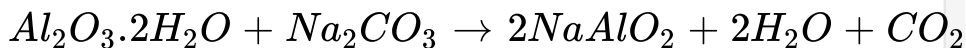


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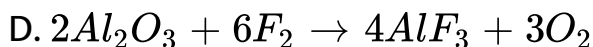
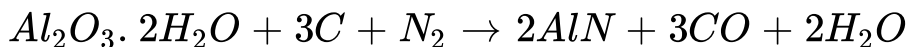
39. Which of the following reaction is involved in the Hall's method of purification of bauxite ?



B.



C.

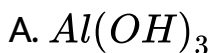


**Answer: B**



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**40.** Alumina is \_\_\_\_\_.



C.  $AlN$

D.  $Al_2O_3$

**Answer: D**



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**41.** Aluminium is produced on a large scale by electrolysis of alumina, dissolved in fused cryolite and a little fluorspar are respectively \_\_\_\_\_.

A.  $Na_3AlF_6$  and  $CaF_2$

B.  $AlF_3$  and  $KF$

C.  $Al_2O_3$  and  $KCl$

D.  $KCl$ .  $MgCl_2 \cdot 6H_2O$  and  $MgF_2$

**Answer: A**



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**42.** In Hall and Heroult's process, the molten electrolyte is covered with the layer of powdered coke, which helps to \_\_\_\_\_

- A. prevent oxidation
- B. prevent reduction
- C. prevent loss of heat due to radiation
- D. both (A) and (C)

**Answer: D**



**View Text Solution**

43. Aluminothermic process is used for the extraction of metals, whose oxides are

- A. fusible
- B. not easily reduced by carbon
- C. not easily reduced by hydrogen
- D. strongly basic

**Answer: B**



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44. High quantity of heat is produced in the formation of  $Al_2O_3$ . This property is used for \_\_\_\_\_.

- A. oxidation
- B. roasting
- C. calcination
- D. thermite welding

**Answer: D**



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45. For the extraction of chromium from  $Cr_2O_3$  the process adopted is \_\_\_\_\_ process.

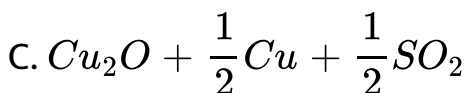
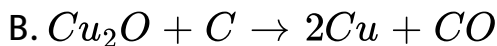
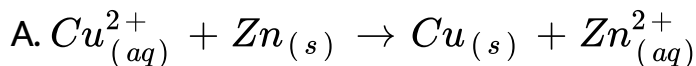
- A. carbon reduction
- B. alumino thermite
- C. electrolytic
- D. chromium thermite

**Answer: B**

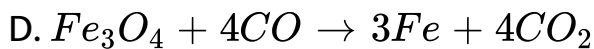


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**46.** The reaction which shows as autoredution is \_\_\_\_\_.







**Answer: C**



**View Text Solution**

47. Blister copper is \_\_\_\_\_.

- A. 99% pure copper
- B. 99.95% pure copper
- C. 99.99% pure copper
- D. 99.95-99.99% pure copper

**Answer: A**



**View Text Solution**

48. During electrolytic refining of blister copper, \_\_\_\_\_.

- A. copper ions from the anode goes into the electrolyte
- B. copper ions from the cathode goes into the electrolyte
- C. copper ions from the electrolyte gets deposited on the anode
- D. both (B) and (C)

**Answer: A**



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49.  $Cu^{2+}$  ions are more stable than  $Cu^{+}$  ions because  $Cu^{2+}$  ions \_\_\_\_\_ as compared to  $Cu^{+}$  ions.

- A. have higher charge
- B. have smaller ionic size
- C. undergo extensive hydration
- D. All of these

**Answer: D**



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50. Which of the following is NOT an ore ?

- A. Bauxite

B. Malachite

C. Zinc blende

D. Pig iron

**Answer: D**



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**51. Galena is an ore of**

A. Pb

B. Hg

C. Sn

D. Zn

**Answer: A**



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**52. Which of the following is FALSE ?**

- A. Column chromatography is used when impurities and the element to be purified differ only slightly in their chemical properties.
- B. Gold is extracted by cyanide process.
- C. Calcination of an ore requires excess of air.
- D. Mond's process is vapour phase refining technique.

**Answer: C**

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**53.** Which of the following ores is subjected to roasting during metallurgical operations for getting the metal oxide ?

A. Zincite

B. Zinc blende

C. Malachite

D. Limonite

**Answer: B**

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**54.** Blast furnace is employed in the smelting of oxide ore with coke and flux in the metallurgy of \_\_\_\_\_.

A. Iron

B. copper

C. Aliminium

D. both (A) and (B)

**Answer: D**



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**Competitive Thinking**

1. Which of the following metal is exclusively found in free state ?

A. copper ions from the anode goes into the electrolyte

B. Gold

C. silver

D. Mercury

**Answer: B**



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2. Which among the following is NOT a mineral of iron ?

A. Haematite



B. Magnesite

C. Magnetite

D. Siderite

**Answer: B**



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**3. (iv) Metallurgy is the process of :**

A. concentrating the ore

B. roasting the ore

C. extracting the metal from the ore

D. adding carbon to the ore in blast furnace

**Answer: C**



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4. Froth floatation method is successful in separating impurities from ores because \_\_\_\_\_.

A. the pure ore is lighter than water containing additives like pine oil , fatty pineoil , fatty acid etc

B. the pure ore is soluble in water containing additives like pine oil, fatty acid, etc.

C. the impurities are soluble in water containing additives like pine oil , fatty acid, etc.

D. the pure ore is not as easily wetted by water as by pine oil , fatty acid, etc.

**Answer: D**



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5. Which one of the following ores is best concentrated by froth floatation method ?

A. magnetite

B. Siderite

C. Galena

D. Malachite

**Answer: C**



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6. An ore containing  $\text{ZnS}$  and  $\text{PbS}$  can be separated by treating them with an agent like  $\text{NaCN}$  in froth floatation process. What is the name of this agent in metallurgy?

- A. Depressant agent
- B. Coagulating agent
- C. Dressing agent
- D. Magnetic agent

**Answer: A**



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7. How is ore of aluminium concentrated ?

- A. By roasting
- B. By leaching
- C. By froth floatation
- D. By using Wilfley table

**Answer: B**



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8. Bauxite ore is concentrated by

- A. froth floatation
- B. electromagnetic separation
- C. chemical separation
- D. hydraulic separation

**Answer: C**



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**9. Name the reagent that is used in leaching of gold .**

- A. Carbon
- B. Sodium cyanide
- C. carbon monoxide

D. Iodine

**Answer: B**



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10. In the equation  
$$, 4M + 8CN^{-} + 2H_2O + O_2 \rightarrow 4[M(CN)_2]^{-} + 4OH^{-},$$
  
the metal M is \_\_\_\_\_.

A. copper

B. iron

C. gold

D. zinc

**Answer: C**



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**11.** Extraction of gold and silver involves leaching with  $CN^-$  ion. silver is later recovered by:

- A. distillation
- B. zone refining
- C. displacement with Zn
- D. Liquation

**Answer: C**



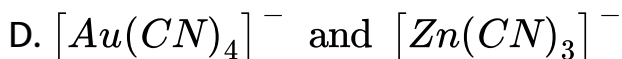
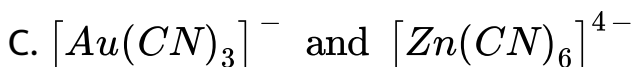
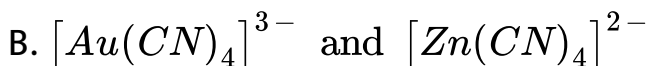
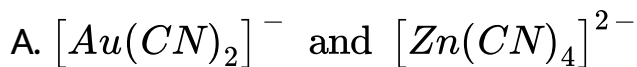
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12. Extraction of gold(Au) involves the formation of complex ions 'X' and 'Y'.

Gold ore  $\xrightarrow{CN^-, H_2O, O_2} HO^- + 'X' \xrightarrow{Zn} 'Y' + Au$  X and

Y are respectively \_\_\_\_\_.



**Answer: A**



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13. When limestone is heated,  $CO_2$  is given off. The metallurgical operation is \_\_\_\_\_

- A. smelting
- B. reduction
- C. calcination
- D. roasting

**Answer: C**



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14. The substance which is mixed with the ore for removal of impurities is termed

A. slag

B. gangue

C. flux

D. catalyst

**Answer: C**



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**15. Flux is used to remove**

A. acidic impurities

B. basic impurities

C. all impurities from ores

D. both (A) and (B)

**Answer: D**



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**16.** Which of the following fluxes is used to remove acidic impurities in metallurgical process?

A. silica

B. Limestone

C. Sodium chloride

D. sodium carbonate

**Answer: B**



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17. When a metal is to be extracted from its ore, if the gangue associated with the ore is silica, then\_\_\_\_\_.

- A. an acidic flux is needed
- B. a basic flux is needed
- C. both acidic and basic flux are needed
- D. neither of them is needed

**Answer: B**



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**18.** Hydro-metallurgical process of extraction of metals is based on

A. complex formation

B. hydrolysis

C. dehydration

D. dehydrogenation

**Answer: A**



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**19.** Name the metal that is purified by placing the impure metal on sloping hearth of a reverberatory furnace and

heating that above its melting point in the absence of air .

A. Mercury

B. Gallium

C. Zirconium

D. Copper

**Answer: A**



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20. In order to refine "blister copper" it is melted in a furnace and is stirred with green logs of wood. The purpose is \_\_\_\_\_

A. to expel the dissolved gases in blister copper

- B. to bring the impurities to surface and oxidize them
- C. to increase the carbon content of copper
- D. to reduce the metallic oxide impurities with hydrocarbon gases liberated from the wood

**Answer: D**



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**21. Zone refining is a method to obtain**

- A. very high temperature
- B. ultra pure sulphides
- C. ultra pure metals



D. ultra pure oxides

**Answer: C**



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**22.** Which method is used to get very pure germanium used is semiconductor ?

A. Electrolysis

B. vapour phase refining

C. Liquation

D. Zone refining

**Answer: D**

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**23.** Which metal is refined by Mond's process?

A. Titanium

B. Copper

C. Nickel

D. Zinc

**Answer: C**

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**24.** Which element is obtained in the pure form by van - Arkel method ?

A. Aluminium

B. Titanium

C. Silicon

D. Nickel

**Answer: B**



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**25.** Extraction of zinc from zinc blende is achieved by

A. electrolytic reduction

- B. roasting followed by reduction with carbon
- C. roasting followed by reduction with another metal
- D. roasting followed by self-reduction

**Answer: B**



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**26. Which ore is used for the manufacture of iron ?**

- A. Cryolite
- B. Bauxite
- C. Haematite
- D. Chalcopyrites

**Answer: C**



**Watch Video Solution**

**27. Which one is a major impurity in pig iron ?**

A. Si

B. O

C. S

D. C

**Answer: D**



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28. Inner layer of blast furnace is made of \_\_\_\_\_.

A. graphite bricks

B. silica bricks

C. fire-clay bricks

D. basic bricks

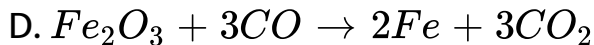
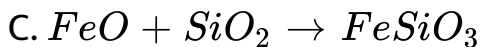
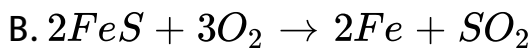
**Answer: C**



**View Text Solution**

29. In smelting of iron, which of the following reactions takes place in blast furnace at  $400^{\circ}C - 600^{\circ}C$  ?





**Answer: D**



**View Text Solution**

**30.** How is limestone used in  $Fe$  extraction?

A. Oxidation of Fe ore

B. Reduction of Fe ore

C. Formation of slag

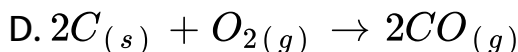
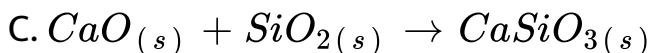
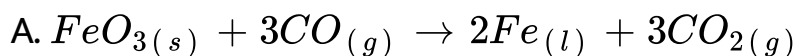
D. Purification of Fe formed

**Answer: C**



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**31.** The following reaction take place in the blast in the proparation of impure iron identify the reaction pertatining to the formetion of the slag



**Answer: C**



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**32.** In blast furnace, the highest temperature is in

- A. reduction
- B. slag
- C. fusion
- D. combustion

**Answer: D**



**Watch Video Solution**

**33.** Corundum is an ore of \_\_\_\_\_

A. copper

B. boron

C. Aluminium

D. sodium

**Answer: C**



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**34.** Serpeck's process is used for bauxite which has following main impurity :

A.  $SiO_2$

B.  $Fe_2O_3$

C.  $Fe_3O_4$

D.  $CaO$

**Answer: A**



**View Text Solution**

**35.** Bauxite, the ore of aluminium is purified by which process ?

A. Hoope's process

B. Hall's process

C. Mond's process

D. Liquation process

**Answer: B**



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**36.** Cryolite is:

A.  $Na_3AlF_6$  and is used in the electrolysis of alumina  
for decreasing electrical conductivity

B.  $Na_3AlF_6$  and is used in the electrolysis of alumina  
for lowering the melting point of alumina only

C.  $Na_3AlF_6$  and is used in the electrolysis of alumina  
for lowering the melting point and increasing the  
conductivity of alumina

D.  $Na_3AlF_6$  and is used in the electrolytic refining of alumina

**Answer: C**



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**37.** Name the process that is employed to refine aluminium.

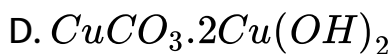
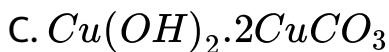
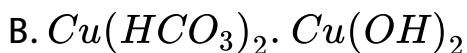
- A. Hall's process
- B. Mond process
- C. Hoopes's process
- D. Serperck's process

**Answer: C**



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38. Composition of Azurite mineral of



Answer: C



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39. Which ore contains both iron and copper ?

A. Cuprite

B. Copper glance

C. Chalcopyrite

D. Malachite

**Answer: C**



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**40.** In extraction of copper, we use \_\_\_\_\_

A. copper glance

B. Malachite

C. silver argentocyanide

D. copper pyrites

**Answer: D**



**View Text Solution**

41. Roasted copper pyrites on smelting with sand produces\_\_\_\_\_.

- A.  $FeSiO_3$  as fusible slag and  $Cu_2O$  matte
- B.  $CaSiO_3$  as infusible slag and  $Cu_2S$  matte
- C.  $Ca_3(PO_4)_2$  as fusible slag and  $Cu_2S$  matte
- D.  $Fe_3(PO_4)_2$  as infusible slag and  $Cu_2S$  matte

**Answer: A**





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**42.** In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with

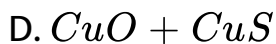
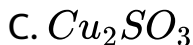
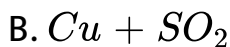
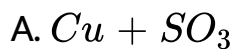
- A. copper (I) sulphide
- B. sulphur dioxide
- C. iron (II) sulphide
- D. copper monoxide

**Answer: A**



[Watch Video Solution](#)

43. Heating mixture of  $Cu_2O$  and  $Cu_2S$  will give



**Answer: B**



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44. During the process of electrolytic refining of copper some metals present as impurity settle as 'anode mud'.  
These are

A. Sn and Ag

B. Pb and Zn

C. Ag and Au

D. Fe and Ni

**Answer: C**



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**45.** Which of the following is a carbonate ore?

A. Pyrolusite

B. Malachite

C. Diaspore

D. Cassiterite

**Answer: B**



**Watch Video Solution**

**46. Which ore of the following is a mineral of iron ?**

A. Malachite

B. Cassiterite

C. Pyrolusite

D. Magnetite

**Answer: D**



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47. The INCORRECT statement among the following is \_\_\_\_\_.

- A. in calcination , ore decomposes to form metal oxide
- B. zirconium is refined by van Arkel method
- C. the sulphide ore galena is concentrated by froth floatation
- D. in the metallurgy of iron, the flux used is  $SiO_2$

**Answer: D**



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48. The most abundant metal in earth's crust is \_\_\_\_\_.

A. Na

B. Mg

C. Al

D. Fe

**Answer: C**



**Watch Video Solution**

49. The metal extracted through self-reduction process is \_\_\_\_\_.

A. Al

B. Cu

C. Ag

D. Zn

**Answer: B**



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## Evaluation Thinking

1. An example of halide ore is \_\_\_\_\_.

A. galena

B. Bauxite

C. copper glance

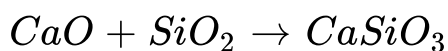
D. cryolite

**Answer: D**



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2. A flux is often added to remove impurities from a concentrated ore. In the reaction



the slag and the flux are

A.  $CaSiO_3$  and  $SiO_2$

B.  $CaSiO_3$  and  $CaO$

C.  $CaO$  and  $SiO_2$



D.  $SiO_2$  and  $CaSiO_3$

**Answer: B**



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3. Before introducing  $FeO$  in blast furnace, it is converted to  $Fe_2O_3$  by roasting so that

- A. it may not be removed as slag with silica
- B. it may not be evaporated in the furnace.
- C. presence of it may increase the melting point of charge.
- D. it may not decompose completely

**Answer: A**



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4. The principle involved in zone refining method is that \_\_\_\_\_.

A. impurities of low boiling metals can be separated by distillation

B. impurities are more soluble in molten metal than in solid metal

C. different components of a mixture are differently adsorbed on an adsorbent

D. vapours of volatile compound can be decomposed  
into pure metal

**Answer: B**



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5. Cryolite is \_\_\_\_\_

A. sodium hexachloro aluminate (III)

B. sodium hexabromo aluminate (III)

C. sodium hexafluoro aluminate (III)

D. sodium hexaiodo aluminate (III)

**Answer: C**



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6. A metal which is refined by polling is \_\_\_\_\_.

A. sodium

B. blister copper

C. zinc

D. silver

**Answer: B**



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7. Silica is added to roasted copper ore during smelting in order to remove\_\_\_\_\_.

A. cuprous sulphide

B. cuprous oxide

C. ferrous oxide

D. ferrous sulphide

**Answer: C**



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8. In Hall and Heroult's process, products liberated at anode and cathode are \_\_\_\_\_.

- A. oxygen and aluminium respectively
- B. carbon monoxide and aluminium respectively
- C. carbon dioxide and aluminium respectively
- D. All of these

**Answer: D**



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**9. Which statement is CORRECT ?**

- A. Gangues are carefully chosen to combine with the slag present in the ore to produce easily fusible flux to carry away the impurities

B. Slags are carefully chosen to combine with the flux present in the ore to produce easily fusible gangue to carry away the impurities

C. Gangues are carefully chosen to combine with the flux present in the ore to produce easily fusible slag to carry away the impurities

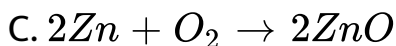
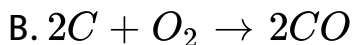
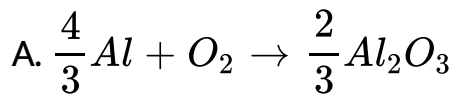
D. Fluxes are carefully chosen to combine with the gangue present in the ore to produce easily fusible slag to carry away the impurities

**Answer: D**



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10. Which of the following reactions has downward slope in the Ellingham diagram ?



**Answer: B**



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11. Roasting involves \_\_\_\_\_.

A. only volatilization of volatile impurities



B. volatilization of volatile impurities and decomposition of the ore

C. volatilization of volatile impurities and decomposition and oxidation of the ore

D. oxidation and reduction of the ore and slag formation

**Answer: C**



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**12.** Silver may be obtained by \_\_\_\_\_.

A. reduction of  $Ag_2S$  by  $(Zn+HCl)$

B. melting  $Ag_2S$  with  $NaCl$

C.  $Ag_2S$  treated with  $NaCN$  then by adding zinc powder

D.  $Ag_2S$  when treated with  $ZnS$

**Answer: C**



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**13.** Acidified zinc sulphate solution used as an electrolyte during electrolytic refining of zinc should contain about \_\_\_\_\_.

A. 3% free  $H_2SO_4$

B. 5% free  $H_2SO_4$

C. 10% free  $H_2SO_4$

D. 20% free  $H_2SO_4$

**Answer: A**



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**14.** Which of the following ores does NOT show the correct formula ?

A. Cuprite- $Cu_2O$

B. Zinc blende-  $ZnS$

C. Magnesite- $Fe_3O_4$

D. Siderite- $FeCO_3$

**Answer: C**



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15. In bessemerization, the sulphide of copper is reduced by \_\_\_\_\_.

A. reduction by carbon

B. electrolysis

C. auto reduction

D. cyanide process'

**Answer: C**



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