



CHEMISTRY

BOOKS - MTG WBEE CHEMISTRY (HINGLISH)

CHEMISTRY OF METALS

Wb Workout Category 1 Single Option Correct Type

1. Sulphide ore of zinc / copper is concentrated by

- A. froth-floatation process
- B. electromagnetic process
- C. gravity separation
- D. distillation.

Answer: A



[View Text Solution](#)

2. Which of the following statement is correct regarding the slag obtained during the extraction of a metal like copper or iron ?

- A. The slag is lighter and has higher melting point than the metal.
- B. The slag is lighter and has lower melting point than the metal.
- C. The slag is heavier and has higher melting point than the metal.

D. The slag is heavier and has lower melting point than the metal.

Answer: B



[View Text Solution](#)

3. Which one of the following pairs of substances on reaction will not evolve H_2 gas ?

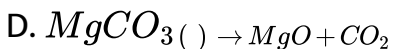
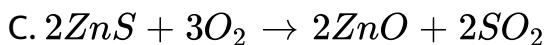
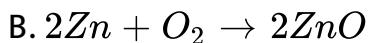
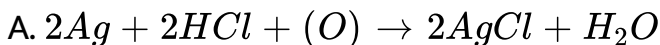
- A. Iron and H_2SO_4 (aq)?
- B. Iron and steam
- C. Copper and $HCl(g)$
- D. Sodium and ethyl alcohol

Answer: C



[View Text Solution](#)

4. Which one of the following reaction is an example for calcination process ?



Answer: D



[View Text Solution](#)

5. Which of the following groups contain coloured ions out of Cu^{2+} , Ti^{4+} , Co^{2+} and Fe^{2+} ?

A. Only Cu^{2+} , Ti^{4+}

B. Cu^{2+} , Co^{2+} , Fe^{2+}

C. Ti^{4+} , Co^{2+}

D. All of these

Answer: B



[View Text Solution](#)

6. The melting point of copper is higher than that of zinc because

A. copper has a bcc structure

B. the atomic volume of copper is higher

C. the J-electrons of copper are involved in metallic bonding

D. the s as well as d-electrons of copper are involved in metallic bonding.

Answer: C



[View Text Solution](#)

7. Which of the following metal is leached by cyanide process?

A. Ag

B. Na

C. Al

D. Cu

Answer: A



[View Text Solution](#)

8. Auto reduction process is used in the extraction of

A. Cu and Hg

B. Zn and Hg

C. Cu and Al

D. Fe and Pb

Answer: A



[View Text Solution](#)

9. The ionic radii of Group 12 metals Zn, Cd and Hg are smaller than those of Group 2 metals because Zn, Cd and Hg have

A. 10d -electrons which shield the nuclear charge poorly

B. 10d-electrons which shield the nuclear charge strongly

C. 10d-electrons which have a large radius ratio

D. 10lf-electrons which have a large exchange energy

Answer: A



View Text Solution

10. The most abundant metal on the surface of the earth is

A. Fe

B. Al

C. Ca

D. Na

Answer: B



[View Text Solution](#)

11. The highest temperature is achieved in which type of furnace?

- A. Blast
- B. Reverberatory
- C. Electric
- D. Muffle

Answer: C



[View Text Solution](#)

12. In the froth-floatation process for bencfaction of the ores, the particles float because

- A. they are light
- B. their surface is wetted by oil
- C. they bear electrostatic charge
- D. they are insoluble.

Answer: B



[View Text Solution](#)

13. Which one of the foolowing ores is best concentrated by froth-floatation method?

- A. Malachite

B. Cassiterite

C. Galena

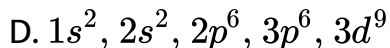
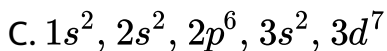
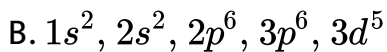
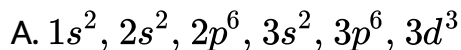
D. Magnetite.

Answer: C



[View Text Solution](#)

14. Which of the following ions having following electronic structure would have maximum magnetic moment?



Answer: B



[View Text Solution](#)

15. Which of the following compounds is used as the starting material for the preparation of potassium dichromate?

A. $K_2SO_4 \cdot Cr_2(SO_4)_3 \cdot 24H_2O$ (Chronic alum)

B. $PbCrO_4$ (Chromite yellow)

C. $FeCr_2O_4$ (Chromite)

D. $PbCrO_4, PbO$ (chromic red)

Answer: C



[View Text Solution](#)

16. Out of the ions Zn^{2+} , Ni^{2+} and Cu^{3+} (At. Nos. Zn=30 Ni=28, Cr=24)

- A. only Zn^{2+} is colourless and Ni^{2+} and Cr^{3+} are coloured
- B. all three are colourless
- C. all three are coloured
- D. only Ni^{2+} is coloured and Zn^{2+} and Cr^{3+} are colourless

Answer: A



[View Text Solution](#)

17. Potassium manganate (K_2MnO_4) is formed when

- A. chlorine is passed into aqueous $KMnO_4$ solution

B. manganese dioxide is fused with potassium hydroxide in air

C. formaldehyde reacts with potassium permanganate in presence of a strong alkali

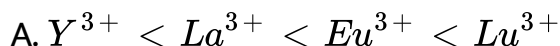
D. potassium permanganate reacts with concentrated sulphuric acid.

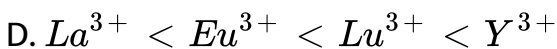
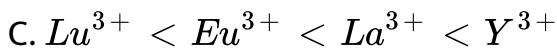
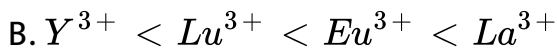
Answer: B



[View Text Solution](#)

18. The correct order ionic radii of Y^{3+} , La^{3+} , Eu^{3+} and Lu^{3+} is





Answer: B



View Text Solution

19. Which method is not correctly given for refining of crude metals?

A. Distillation : zinc and mercury

B. Liquation : tin

C. Van Arkel: zirconium

D. Mond's process : lead

Answer: D



View Text Solution

20. The method of zone refining of metals is based on the principle of

- A. greater mobility of the pure metal than that of the impurity
- B. higher melting point of the impurity than that of the pure metal
- C. greater noble character of the solid metal than that of the impurity
- D. greater solubility of the impurity in the molten state than in the solid.

Answer: D



[View Text Solution](#)

21. In the extraction of copper from its sulphide ore, the metal is formed by reduction of Cu^2O with

A. FeS

B. CO

C. Cu_2S

D. SO_2

Answer: C



[View Text Solution](#)

22. Among the enlisted compounds, which one is used as a froth stabilizer in the froth floatation process?

A. Aniline

B. Phenol

C. Benzaldehyde

D. Anisole

Answer: A



[View Text Solution](#)

23. Which of the following benefaction process is used for the mineral $Al_2O_3 \cdot 2H_2O$?

A. Froth-floatation

B. Leaching

C. Liquifaction

D. Magnetic separation

Answer: B



View Text Solution

24. The methods chiefly used for the extraction of lead and tin from their ores are respectively

A. self reduction and carbon reduction

B. carbon reduction and self reduction

C. carbon reduction and self reduction

D. none of these.

Answer: A



[View Text Solution](#)

25. An acidified solution of potassium permanganate oxidizes

- A. sulphates
- B. sulphites
- C. nitrates
- D. ferric salts.

Answer: B



[View Text Solution](#)

26. The iron obtained from blast furnace is

- A. pig iron
- B. wrought iron
- C. soft iron
- D. steel.

Answer: A



[View Text Solution](#)

27. Cryolite is

- A. $Na_3Al_2F_6$ 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

C. Na_2AlF_6 and is used in the electrolytic purification of alumina

D. $Na_3Al_2F_6$ and is used in the electrolysis of alumina

Answer: B



View Text Solution

28. Pick up the incorrect statement .

A. Asbestos and willemite are silicate minerals

B. Anglesite and barytes are sulphate minerals

C. Sylvine and fluorspar are halide minerals

D. Calamine and zincite are the minerals of calcium

Answer: D



[View Text Solution](#)

29. Out of the following metals that cannot be obtained by electrolysis of the aqueous solution of their salts is

A. Ag

B. Cr

C. Cu and Al

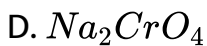
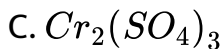
D. Mg

Answer: D



[View Text Solution](#)

30. Which of the following compounds is formed when a mixture of $K_2Cr_2O_7$ and NaCl is heated with conc. H_2SO_4 ?



Answer: A



View Text Solution

Wb Workout Category 2 Single Option Correct Type

1. In acidic medium, $KMnO_4$ oxidises $FeSO_4$ solution. Which of the following statements is correct?

A. 10 ml of 1 N $KMnO_4$ solution oxidises 10 ml of 5 N

$FeSO_4$ solution

B. 10 ml of 1 M $KMnO_4$ solution oxidises 10 ml of 5M

$FeSO_4$ solution

C. 10 ml of 1M $KMnO_4$ solution oxidises 10 ml of 1 M $FeSO_4$

solution

D. 10 ml of 1 N $KMnO_4$ solution oxidises 10 ml of 0.1 M

$FeSO_4$ solution.

Answer: B



[View Text Solution](#)

2. PbS can be separated from ZnS by electrostatic separation method. The property utilized in this method is

- A. PbS is a good conductor and ZnS is a poor conductor of electricity
- B. PbS is a bad conductor and ZnS is a good conductor of electricity
- C. both PbS and ZnS are good conductors
- D. both PbS and ZnS are bad conductors

Answer: A



[View Text Solution](#)

3. Which metals are present in german silver ?

A. Cu

B. Ni

C. Zn

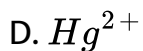
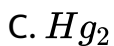
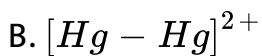
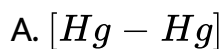
D. Ag

Answer: A::B::C



[View Text Solution](#)

4. The mercury (I) ion is always

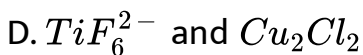
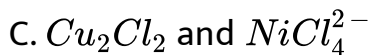
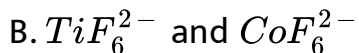
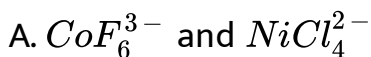


Answer: B



View Text Solution

5. Among TiF_6^{2-} , CoF_6^{3-} , Cu_2Cl_2 and $NiCl_4^{2-}$ ($At, NoTi = 22, Co = 27, Cu = 29, Ni = 28$) The colourless species are

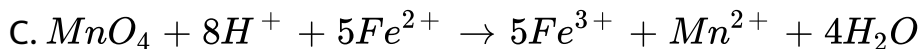
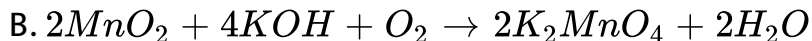


Answer: D

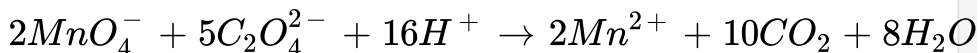


View Text Solution

6. Which reaction shows processing of pyrolusite ore?



D.



Answer: B



[View Text Solution](#)

7. The radius of La^{3-} (at. No. 57) is 1.06\AA , Which one of the following given values will be closest to the radius of Lu^{3-} (at. No. 71)?

A. 1.60 A

B. 1.40 A

C. 1.06 A

D. 0.85 A

Answer: D



View Text Solution

8. In $K_2Cr_2O_7$, every Cr is linked to

A. two O-atoms

B. three O-atoms

C. four O-atoms

D. five O-atoms

Answer: C



View Text Solution

9. In aluminium extraction by the Baeyer's process, alumina is extracted from bauxite by sodium hydroxide at high temperatures and pressures.

$Al_2O_3(s) + 2OH^-_{(aq)} \rightarrow 2AlO_2^-_{(aq)} + H_2O_l$ Solid impurities such as Fe_2O_3 and SiO_2 are removed and then $Al(OH)_4^-$ is reprecipitated.

In the industrial world

- A. carbon dioxide is added to precipitate the alumina
- B. temperature and pressure are dropped and the supersaturated solution seeded
- C. both (a) and (b) are practised

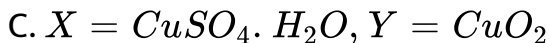
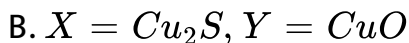
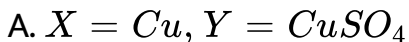
D. the water is evaporated

Answer: C



View Text Solution

10. Deep blue $CuSO_4 \cdot 5H_2O$ is converted to a bluish white salt at $100^\circ C$. At $250^\circ C$ and $750^\circ C$ it is then transformed to a white powder (X) and black material (Y) respectively. Identify the salts.



Answer: D



[View Text Solution](#)

11. Near the top of the blast furnace, iron oxides are reduced to spongy iron by

A. C

B. CO

C. CO_2

D. $CaCO_3$

Answer: B



[View Text Solution](#)

12. When SO_2 is passed through acidified $K_2Cr_2O_7$ solution

- A. the solution turns blue
- B. the solution is decolourised
- C. SO_2 is reduced
- D. green $Cr_2(SO_4)_3$ is formed.

Answer: D



View Text Solution

13. The reason for the stability of Gd^{3+} ion is \

- A. half filled 4/-subshell
- B. completely filled 4/-subshell

C. possesses the general electronic configuration of noble gases

D. empty 4/-subshell.

Answer: A



View Text Solution

14. Which of the following statement, about the advantage of roasting of sulphide ore before reduction is not true?

A. The ΔG_f° of the sulphide is greater than those for CS_2 and H_2S .

B. The ΔG_f° is negative for roasting of sulphide ore to oxide.

C. Roasting of the sulphide to the oxide is thermodynamically feasible.

D. Carbon and hydrogen are suitable reducing agents for metal sulphides.

Answer: D



[View Text Solution](#)

15. One of the products formed due to the reaction between $KMnO_4$ and HCl is

A. red liquid

B. MnO_2

C. greenish yellow gas

D. $HClO_4$

Answer: C



View Text Solution

Wb Workout Category 3 One Or More Option Correct Type

1. Which of the following ores represent the ores of iron?

A. Cassiterite

B. Limonite

C. Haematite

D. Magnetite

Answer: B::C::D



[View Text Solution](#)

2. Lanthanides and actinides are also called as

- A. short periods
- B. inner transition elements
- C. long periods
- D. main transition elements.

Answer: B



[View Text Solution](#)

3. Oxides of which of the following metals show oxidation state of +8 ?

A. Ru

B. Os

C. Mn

D. Zn

Answer: A::B



[View Text Solution](#)

4. Select the correct statements.

A. In the decomposition of an oxide into metal entropy increases

B. To make ΔG negative, $T\Delta S > \Delta H$

C. Ellingham diagram represents change in free energy with temperature

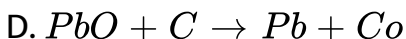
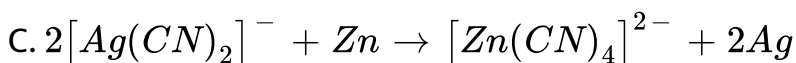
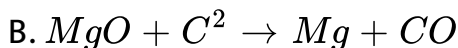
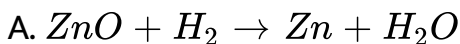
D. Reduction of an oxide with aluminium is called Van Arkel process.

Answer: A::B::C



[View Text Solution](#)

5. Select the correct reduction processes.



Answer: B::C::D



View Text Solution

6. The role of calcination in metallurgical operation is

- A. To remove moisture
- B. To decompose carbonate
- C. To oxidise sulphates
- D. To remove organic matter.

Answer: A::B::D



View Text Solution

7. Select the correct statements.

- A. Based on reactivity series, occurrence of certain elements takes place in native state
- B. Cresol and aniline are called froth stabilizers in froth floatation process
- C. Due to basic nature of oxides alkali metal oxides can not be reduced by carbon
- D. Sulphide ores of Cu, Ag, Zn are concentrated by hydraulic washing.

Answer: A::B



[View Text Solution](#)

8. Which of the following factors may be regarded as the cause of lanthanoid contraction ?

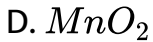
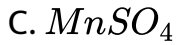
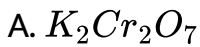
- A. Effective shielding of one $4f$ electron by another in subshell.
- B. Poor shielding of one of $4f$ electrons by another in the subshell.
- C. Increase in nuclear charge outweighs the imperfect shielding by f -electrons.
- D. Poorer shielding of $5d$ electrons by f -electrons.

Answer: B::C



[View Text Solution](#)

9. Which of the following compounds are coloured due to charge transfer spectrum ?



Answer: A::B



[View Text Solution](#)

10. NaCN is added in froth floatation process process with ZnS and PbS minerals because

A. $Pb(CN)_2$ is precipitated while no effect on ZnS

B. ZnS forms soluble complex while PbS forms froth

C. it acts as a depressant

D. NaCN is never added in froth floatation process.

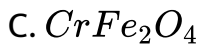
Answer: A::C



View Text Solution

Wb Jee Previous Years Questions Category 1 Single Option Correct Type

1. The ore chromite is

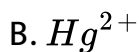


Answer: A



[View Text Solution](#)

2. Metal ion responsible for the Minamata disease is



Answer: B



[View Text Solution](#)

3. Consider the following salts:

$NaCl$, $HgCl_2$, Hg_2Cl_2 , $CuCl_2$, $CuCl$ and $AgCl$, Identify the

correct set of insoluble salts in water.



Answer: A



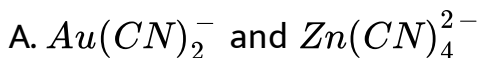
[View Text Solution](#)

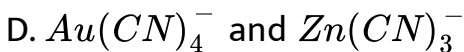
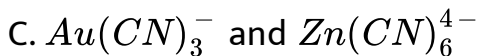
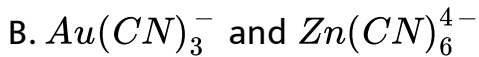
4. Extraction of gold (Au) involves the formation of complex ions

'X' and 'Y'. Gold or e

overset("Roasting")underset(CN^(-),H_(2)O,O_(2))to HO^(-)+X

overset("Zn")to Y+Au 'X' and 'Y' are respectively



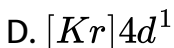
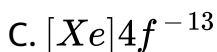
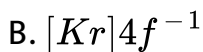


Answer: A



View Text Solution

5. The atomic number of cerium (Ce) is 58. The correct electronic configuration of Ce^{3+} ion is



Answer: A



[View Text Solution](#)

6. Which of the following statements regarding lanthanides is false?

- A. All lanthanides are solid at room temperature.
- B. Their usual oxidation state is +3.
- C. They can be separated from one another by ion-exchange method
- D. Ionic radii of trivalent lanthanides steadily increases with increase in atomic number.

Answer: D



[View Text Solution](#)

7. The metal which can be used to obtain metallic Cu from aqueous $CuSO_4$ solution is

A. Na

B. Ag

C. Hg

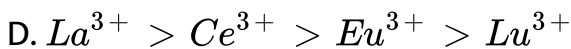
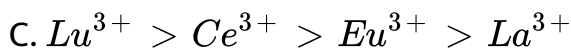
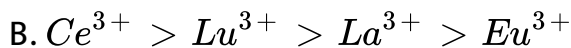
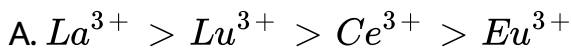
D. Fe

Answer: D



[View Text Solution](#)

8. The correct basicity order of the following lanthanide ions is

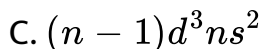
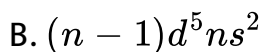
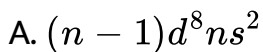


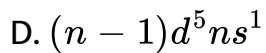
Answer: D



[View Text Solution](#)

9. Out of the following outer electronic configurations of atoms, the highest oxidation state is achieved by which one?



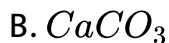
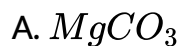


Answer: B



[View Text Solution](#)

10. Which of the following is least thermally stable ?

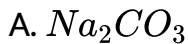


Answer: D



[View Text Solution](#)

11. In the Bayer's process, the leaching of alumina is done by using



Answer: B

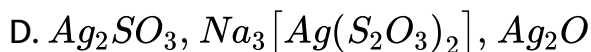
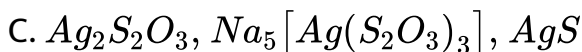
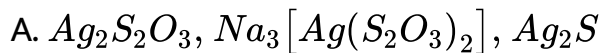


[View Text Solution](#)

12. Addition of sodium thiosulphate solution to a solution of silver nitrate give 'X' as white precipitate, insoluble in water but soluble in excess thiosulphate solution to give 'Y'. On

boiling in water, 'Y' gives 'Z'. 'X', 'Y' and 'Z'. respectively,

are



Answer: A

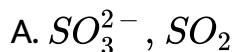


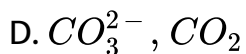
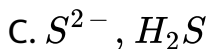
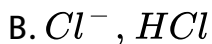
[View Text Solution](#)

13. $[X] + dil, H_2SO_4 \rightarrow [y]$ colourless suffocating gas

$[y] + K_2Cr_2O_7 + H_2SO_4 \rightarrow$ green colouration of solution

Then, [x] and [y] are





Answer: A



[View Text Solution](#)

14. A copper coin was electroplated with Zn and then heated at high temperature until there is a change in colour. What will be the resulting colour ?

A. White

B. Black

C. Silver

D. Golden

Answer: D



[View Text Solution](#)

Wb Jee Previous Years Questions Category 2 Single Option Correct Type

1. Roasted copper pyrite on smelting with sand produces

- A. $FeSO_3$ as fusible slag and Cu_2S as matte
- B. $CaSiO_3$ as infusible slag and Cu_2O as matte
- C. $Ca_3(PO_4)_2$ as fusible slag and Cu_2S as matte
- D. $Fe_3(PO_4)_2$ as infusible slag and Cu_2S as matte

Answer: A



[View Text Solution](#)

Wb Jee Previous Years Questions Category 3 One Or More Option Correct Type

1. The important advantage(s) of Lintz and Donawitz (L.D.) process for the manufacture of steel is (are)

- A. the process is very quick
- B. operating costs are low
- C. better quality steel is obtained
- D. scrap iron can be used.

Answer: A::C::D



[View Text Solution](#)

2. Cupric compounds are more stable than their cuprous counterparts in solid state. This is because

A. the endothermic character of the 2nd /I. P. of Cu is not so high

B. Cu^{2+} has stabler electronic configuration as compared to Cu^+

C. Cu^{2+} has stabler electronic configuration as compared to Cu^+

D. the lattice energy released for cupric compounds is much higher than Cu^+ .

Answer: B::D



View Text Solution

3. Which of the following statement(s) is (are) correct when a mixture of NaCl and $K_2Cr_2O_7$ is gently warmed with conc. H_2SO_4 ?

A. A deep red vapour is evolved.

B. The vapour when passed through NaOH solution, gives a yellow solution.

C. Chlorine gas is also evolved.

D. Chromyl chloride is formed.

Answer: A::B::D



View Text Solution

4. During electrolysis of molten $NaCl$, some water is added, what will happen?

- A. Electrolysis will stop.
- B. Hydrogen will be evolved.
- C. Some amount of caustic soda will be formed
- D. A fire is likely

Answer: B::C::D



[View Text Solution](#)

5. The role of fluorspar, which is added in small quantities in the electrolytic reduction of alumina dissolved in fused cryolite is

- A. as a catalyst

B. to make fused mixture conducting

C. to lower the melting temperature of the mixture

D. to decrease the rate of oxidation of carbon at anode

Answer: B::C



View Text Solution