

# QB365 Question Bank Software Study Materials

## Metallurgy 50 Important 1 Marks Questions With Answers (Book Back and Creative)

12th Standard

Chemistry

Total Marks : 50

### Multiple Choice Question

50 x 1 = 50

- 1) Bauxite has the composition \_\_\_\_\_.  
 (a)  $\text{Al}_2\text{O}_3$     **(b)  $\text{Al}_2\text{O}_3 \cdot n\text{H}_2\text{O}$**     (c)  $\text{Fe}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$     (d) None of these
- 2) Roasting of sulphide ore gives the gas (A). (A) is a colourless gas. Aqueous solution of (A) is acidic. The gas (A) is \_\_\_\_\_.  
 (a)  $\text{CO}_2$     (b)  $\text{SO}_3$     **(c)  $\text{SO}_2$**     (d)  $\text{H}_2\text{S}$
- 3) Which one of the following reaction represents calcinations?  
 (a)  $2\text{Zn} + \text{O}_2 \rightarrow 2\text{ZnO}$     (b)  $2\text{ZnS} + 3\text{O}_2 \rightarrow 2\text{ZnO} + 2\text{SO}_2$     **(c)  $\text{MgCO}_3 \rightarrow \text{MgO} + \text{CO}_2$**     (d) Both (a) and (c)
- 4) The metal oxide which cannot be reduced to metal by carbon is \_\_\_\_\_.  
 (a)  $\text{PbO}$     **(b)  $\text{Al}_2\text{O}_3$**     (c)  $\text{ZnO}$     (d)  $\text{FeO}$
- 5) Which of the metal is extracted by Hall-Heroult process?  
**(a) Al**    (b) Ni    (c) Cu    (d) Zn
- 6) Which of the following statements, about the advantage of roasting of sulphide ore before reduction is not true?  
 (a)  $\Delta G_f^0$  of sulphide is greater than those for  $\text{CS}_2$  and  $\text{H}_2\text{S}$     (b)  $\Delta G_r^0$  is negative for roasting of sulphide ore to oxide  
 (c) Roasting of the sulphide to its oxide is thermodynamically feasible  
**(d) Carbon and hydrogen are suitable reducing agents for metal sulphides**
- 7) Match items in column - I with the items of column - II and assign the correct code.

Column-I	Column-II
A. Cyanide process	(i) Ultrapure Ge
B Froth floatation process	(ii) Dressing of ZnS
C Electrolytic reduction	(iii) Extraction of Al
D Zone refining	(iv) Extraction of Au
	(v) Purification of Ni

(a)	(b)	<b>(c)</b>	(d)
A B C D	A B C D	<b>A B C D</b>	A B C D
(i)(ii)(iii)(iv)	(iii)(iv)(v)(i)	<b>(iv)(ii)(iii)(i)</b>	(ii)(iii)(i)(v)

- 8) Wolframite ore is separated from tinstone by the process of \_\_\_\_\_.  
 (a) Smelting    (b) Calcination    (c) Roasting    **(d) Electromagnetic separation**
- 9) Which one of the following is not feasible  
 (a)  $\text{Zn}_{(s)} + \text{Cu}^{2+}_{(aq)} \rightarrow \text{Cu}_{(s)} + \text{Zn}^{2+}_{(aq)}$     **(b)  $\text{Cu}_{(s)} + \text{Zn}^{2+}_{(aq)} \rightarrow \text{Zn}_{(s)} + \text{Cu}^{2+}_{(aq)}$**     (c)  $\text{Cu}_{(s)} + 2\text{Ag}^+_{(aq)} \rightarrow 2\text{Ag}_{(s)} + \text{Cu}^{2+}_{(aq)}$   
 (d)  $\text{Fe}_{(s)} + \text{Cu}^{2+}_{(aq)} \rightarrow \text{Cu}_{(s)} + \text{Fe}^{2+}_{(aq)}$
- 10) Electrochemical process is used to extract \_\_\_\_\_.  
 (a) Iron    (b) Lead    **(c) Sodium**    (d) silver
- 11) Flux is a substance which is used to convert \_\_\_\_\_.

- (a) Mineral into silicate    **(b) Infusible impurities to soluble impurities**    (c) Soluble impurities to infusible impurities  
(d) All of these
- 12) Which one of the following ores is best concentrated by froth – floatation method?  
(a) Magnetite    (b) Haematite    **(c) Galena**    (d) Cassiterite
- 13) In the extraction of aluminium from alumina by electrolysis, cryolite is added to\_\_\_\_\_.  
**(a) Lower the melting point of alumina**    (b) Remove impurities from alumina    (c) Decrease the electrical conductivity  
(d) Increase the rate of reduction
- 14) Zinc is obtained from ZnO by\_\_\_\_\_.  
**(a) Carbon reduction**    (b) Reduction using silver    (c) Electrochemical process    (d) Acid leaching
- 15) Extraction of gold and silver involves leaching with cyanide ion. silver is later recovered by\_\_\_\_\_.  
(a) Distillation    (b) Zone refining    **(c) Displacement with zinc**    (d) liquation
- 16) Considering Ellingham diagram, which of the following metals can be used to reduce alumina?  
(a) Fe    (b) Cu    **(c) Mg**    (d) Zn
- 17) The following set of reactions are used in refining Zirconium  

$$\text{Zr}(\text{impure}) + 2\text{I}_2 \xrightarrow{523\text{k}} \text{ZrI}_4$$

$$\text{ZrI}_4 \xrightarrow{1800\text{K}} \text{Zr}(\text{pure}) + 2\text{I}_2$$
This method is known as \_\_\_\_\_.  
(a) Liquation    **(b) Van Arkel process**    (c) Zone refining    (d) Mond's process
- 18) Which of the following is used for concentrating ore in metallurgy?  
(a) Leaching    (b) Roasting    (c) Froth floatation    **(d) Both (a) and (c)**
- 19) The incorrect statement among the following is\_\_\_\_\_.  
(a) Nickel is refined by Mond's process    (b) Titanium is refined by Van Arkel's process  
(c) Zinc blende is concentrated by froth floatation  
**(d) In the metallurgy of gold, the metal is leached with dilute sodium chloride solution**
- 20) In the electrolytic refining of copper, which one of the following is used as anode?  
(a) Pure copper    **(b) Impure copper**    (c) Carbon rod    (d) Platinum electrode
- 21) Which of the following plot gives Ellingham diagram  
(a)  $\Delta S$  Vs  $T$     **(b)  $\Delta G^0$  Vs  $T$**     (c)  $\Delta G^0$  Vs  $\frac{1}{T}$     (d)  $\Delta G^0$  Vs  $T^2$
- 22) In the Ellingham diagram, for the formation of carbon monoxide\_\_\_\_\_.  
(a)  $\left(\frac{\Delta S^0}{\Delta T}\right)$  is negative    (b)  $\left(\frac{\Delta G^0}{\Delta T}\right)$  is positive    **(c)  $\left(\frac{\Delta G^0}{\Delta T}\right)$  is negative**  
(d) initially  $\left(\frac{\Delta T}{\Delta G^0}\right)$  is positive, after 700°C,  $\left(\frac{\Delta G^0}{\Delta T}\right)$  is negative
- 23) Which of the following reduction is not thermodynamically feasible?  
(a)  $\text{Cr}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Cr}$     **(b)  $\text{Al}_2\text{O}_3 + 2\text{Cr} \longrightarrow \text{Cr}_2\text{O}_3 + 2\text{Al}$**     (c)  $3\text{TiO}_2 + 4\text{Al} \longrightarrow 2\text{Al}_2\text{O}_3 + 3\text{Ti}$   
(d) none of these
- 24) Which of the following is not true with respect to Ellingham diagram?

- (a) Free energy changes follow a straight line. Deviation occurs when there is a phase change.  
**(b) The graph for the formation of CO<sub>2</sub> is a straight line almost parallel to free energy axis.**  
 (c) Negative slope of CO shows that it becomes more stable with increase in temperature.  
 (d) Positive slope of metal oxides shows that their stabilities decrease with increase in temperature.
- 25) Name the process by which elements such as germanium, silicon and galium are refined.  
 (a) Vapour phase method (b) Electrolytic refining **(c) Zone refining** (d) Van-Arkel method
- 26) Which of the following will give respective metal by self reduction?  
 (a) Galena (Pbs) (b) HgS (c) ZnS **(d) Both (a) & (b)**
- 27) The process of heating of copper pyrites to remove sulphur is called \_\_\_\_\_.  
 (a) froth flotation **(b) roasting** (c) calcination (d) smelling
- 28) Sulphide ore is converted to oxide form by using the process\_\_\_\_\_.  
 (a) Calcination **(b) Roasting** (c) Smelting (d) Leavhing
- 29) Zinc is extracted from Zinc blende by\_\_\_\_\_.  
**(a) Carbon reduction process** (b) Nitrogen reduction process (c) Oxygen reduction process (d) All of these
- 30)  $ZnS + 3O_2 \xrightarrow{\Delta} 2ZnO + 2SO_2 \uparrow$ . The above equation is an example for\_\_\_\_\_.  
 (a) calcination (b) reduction **(c) roasting** (d) leaching
- 31) Na[Ag(CN)<sub>2</sub>] is \_\_\_\_\_.  
 (a) Sodium aurocyanide (b) Sodium meta aluminate (c) Aluminosilicate **(d) Sodium dicyano argentate**
- 32)  $Zn_{(s)} + 2[Au(CN)_2]_{(aq)}^- \longrightarrow [Zn(CN)_4]_{(aq)}^{2-} + 2Au_{(s)}$  In the above equation the oxidation state of metallic gold is\_\_\_\_\_  
 (a) 1 **(b) 0** (c) +2 (d) -2
- 33) The following set of reaction is used for refining titanium. This method is known as\_\_\_\_\_  
 $Ti_{(g)} + 2I_{2(s)} \longrightarrow TiI_4(vapour)$   
 $TiI_4(vapour) \longrightarrow Ti_{(g)} + 2I_{2(s)}$   
 (a) Hall Heroult process (b) Mond process **(c) Van-Arkel process** (d) Alumino thermic process
- 34) Metal oxide is converted into metal by the \_\_\_\_\_ process.  
 (a) Calcination (b) roasting **(c) smelting** (d) beesemerisation
- 35) In Hall-Heroult process\_\_\_\_\_act as an anode.  
**(a) Carbon blocks** (b) hydrogen (c) copper rods (d) Zinc rods
- 36) Sulphide ores of metals are usually concentrated by floath flotation process. Which one of the following sulphide ore offers an exception and is concentrated by chemical leaching?  
**(a) Argentite** (b) Galena (c) Copper pyrites (d) Sphalerite
- 37) Which method of purification represented by the equation?  
 $Ti(\text{impure}) + 2I_2 \xrightarrow{550\text{ K}} TiI_4 \xrightarrow{1800\text{ K}} Ti(\text{pure}) + 2I_2$   
 (a) Cupellation (b) Zone refining **(c) Van -Arkel method** (d) Mond's process
- 38) Leaching process is based on \_\_\_\_\_.  
**(a) solubility** (b) melting point (c) boiling point (d) density
- 39) The insoluble gangue of gold ore is\_\_\_\_\_.

- (a) **aluminosilicate** (b) sodium zincate (c) sodium cyanide (d) Iron (III) oxide

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	Column-I	Column-II
(A)	Hydrogen reduction	(i) $\text{Cr}_2\text{O}_3$
(B)	Carbon reduction	(ii) $\text{HgS}$
(C)	Metal reduction	(iii) $\text{Mn}_3\text{O}_4$
(D)	Auto reduction	(iv) $\text{AgCl}$
		(v) $\text{Fe}_3\text{O}_4$

(a)	(b)	(c)	(d)
A B C D	A B C D	<b>A B C D</b>	A B C D
(iii)(v)(i)(ii)	(iv)(ii)(v)(iii)	<b>(v)(iii)(i)(ii)</b>	(ii)(i)(iii)(vi)

- 41)  $\text{PbCO}_3 \xrightarrow{\Delta} \text{PbO} + \text{CO}_2 \uparrow$  takes place during \_\_\_\_\_.
- (a) Roasting (b) Smelting **(c) Calcination** (d) Leaching
- 42) In the extraction of copper from copper pyrites the chemical composition of slag is \_\_\_\_\_.
- (a) ore **(b) flux** (c) matrix (d) mineral
- 43)  $\text{Cr}_2\text{O}_3$  can be reduced by \_\_\_\_\_.
- (a) Aluminothermic process** (b) Mond's process (c) Cyanide process (d) Hydrogen reduction
- 44) In aluminothermic process, aluminium acts as \_\_\_\_\_.
- (a) oxidising agent **(b) reducing agent** (c) dehydrating agent (d) decarboxylating agent
- 45) For a spontaneous reaction, the change in free energy ( $\Delta G$ ) should be \_\_\_\_\_.
- (a) positive **(b) negative** (c) zero (d) constant
- 46)  $\Delta G^\circ$  can be calculated using the equilibrium constant by \_\_\_\_\_.
- (a)  $\Delta G^\circ = RT \ln K_c$  (b)  $\Delta G^\circ = RT \ln K_p$  **(c)  $\Delta G^\circ = -RT \ln K_p$**  (d)  $\Delta G^\circ = RT \ln \frac{K_p}{K_c}$
- 47) Zone refining is based on \_\_\_\_\_.
- (a) fractional distillation** (b) simple distillation (c) sublimation (d) fractional crystallisation
- 48) Which one is used for making aeroplane parts?
- (a) Stainless steel **(b) Nickel steel** (c) Chrome steel (d) Cast iron
- 49) Metal oxides become less stable at \_\_\_\_\_.
- (a) lower temperature **(b) higher temperature** (c) moderate temperature (d)  $0^\circ\text{C}$
- 50) Sudden change in the slope occurs for the metal oxide \_\_\_\_\_.
- (a)  $\text{MgO}$  (b)  $\text{HgO}$  (c)  $\text{Al}_2\text{O}_3$  **(d) both (a) and (b)**