RAVI MATHS TUITION CENTER, NEAR VILLIVAKKAM RLY STATION, CHENNAI – 82.
WHATSAPP - 8056206308

Metallurgy FULL TEST

12th Standard

Chemistry

Exam Time : 02:30:00 Hrs | Total Marks : 100

20 x 1 = 20

1) Bauxite has the composition
(a) Al_2O_3 (b) $Al_2O_3nH_2O$ (c) $Fe_2O_3.2H_2O$ (d) None of these

2) 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)

A	B	C	D

(b)

A	B	C	D
(i)	(ii)	(iii)	(iv)

(c)

A	B	C	D
(iii)	(iv)	(v)	(i)

(d)

A	B	C	D
(ii)	(iii)	(i)	(v)

3) Wolframite ore is separated from tinstone by the process of
(a) Smelting (b) Calcination (c) Roasting (d) Electromagnetic separation

4) Electrochemical process is used to extract
(a) Iron (b) Lead (c) Sodium (d) silver

5) Considering Ellingham diagram, which of the following metals can be used to reduce alumina? (NEET-2018)
(a) Fe (b) Cu (c) Mg (d) Zn

6) 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

7) In the Ellingham diagram, for the formation of carbon monoxide
(a) $\left(\frac{\Delta S^0}{\Delta T}\right)$ is positive (b) $\left(\frac{\Delta G^0}{\Delta T}\right)$ is negative (c) $\left(\frac{\Delta G^0}{\Delta T}\right)$ is initially negative, after 700 ^{o}C, $\left(\frac{\Delta G^0}{\Delta T}\right)$ is positive (d) $\left(\frac{\Delta T}{\Delta G^0}\right)$ is negative

8) Which of the following is not a mineral of aluminium?
(a) Bauxite (b) Cryolite (c) China clay (d) Malachite

9) Which of the following is commonly used to produce foam in froth floatation process?
(a) Pine oil (b) Cresol (c) NaCN (d) Xanthate

10) In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with
(a) Iron sulphide (FeS) (b) Carbon monoxide (CO) (c) Copper (I) sulphide (Cu_2S) (d) Sulphur dioxide ($S0_2$)

11) Which among the following reaction represents the formation of slag?
(a) $CaO_{(s)} + SiO_{2(s)} \longrightarrow CaSiO_{3(s)}$ (b) $2C_{(s)} + O_{2(g)} \longrightarrow 2CO_{(g)}$ (c) $Fe_2O_3 + 3CO_{(g)} \longrightarrow 2Fe_{(l)} + 3CO_{2(g)}$ (d) $CaCO_{3(g)} \longrightarrow C$

12) Identify the decreasing order of carbon content in different forms of iron
(a) Wrought iron > Pig iron > castiron (b) Castiron > Pig iron > Wrought iron (c) Pig iron > Cast iron > Wrought iron (d) Cast iron > Wrought iron > Pig iron

13) The blistered appearance of Cu obtained from the reverberatory furance is due to evolution of
(a) CO_2 gas (b) $S0_2$ gas (c) NO_2 (d) Due to evaporation of volatile materials

14) ΔG^o vs T plot in the Ellingham's diagram slopes downward the reaction.
(a) $Mg + \frac{1}{2}O_2 \longrightarrow MgO$ (b) $C + \frac{1}{2}O_2 \longrightarrow CO$ (c) $2Ag + \frac{1}{2}O_2 \longrightarrow Ag_2O$ (d) $2Ag + \frac{1}{2}O_2 \longrightarrow Ag_2O$

15) Pick out the alloy that contains a non-metal as a constituent in it
(a) Brass (b) Bronze (c) Steel (d) Invar

16) In acid leaching process. the insoluble sulphide is converted into soluble sulphate and elemental_____
(a) carbon (b) lead (c) sulphur (d) zinc

17) Sulphide ore is converted to oxide form by using the process_____

(a) Calcination (b) Roasting (c) Smelting (d) Leavhing

18) $Zn_{(s)} + 2[Au(CN)_2]^-_{(aq)} \longrightarrow [Zn(CN)_4]^{2-}_{(aq)} + 2Auu_{(s)}$ In the above equation) the oxidation state of metallic;gold is_____

(a) 1 (b) 0 (c) +2 (d) -2

19) In the metallurgy of iron) limestone is added to coke. Which acts as a_____

(a) Reducing agent (b) Oxidising agent (c) Slag (d) Flux

20) Steelis an alloy of_____

(a) iron and carbon (b) iron and calcium (c) copper and carbon (d) copper and iron

9 x 2 = 18

21) What is the difference between minerals and ores?

22) What are the various steps involved in extraction of pure metals from their ores?

23) What is the role of Limestone in the extraction of Iron from its oxide Fe_2O_3?

24) Which type of ores can be concentrated by froth floatation method? Give two examples for such ores.

25) Out of coke and CO, which is better reducing agent for the reduction of ZnO? Why?

26) Describe a method for refining nickel

27) Discuss the process of roasting with suitable example.

28) Name some depressing agents

29) What is the role of silica in the extraction of copped? (or)
Describe the role of SiO_2 in the extraction of Cu from Copper matte.

9 x 3 = 27

30) Explain zone refining process with an example using the Ellingham diagram given below

31) (A) Predict the conditions under which
(i) Aluminium might be expected to reduce magnesia.
(ii) Magnesium could reduce alumina.
(B) Carbon monoxide is more effective reducing agent than carbon below 983K but, above this temperature, the reverse is true –Explain.
(c) it is possible to reduce Fe_2O_3 by coke at a temperature around 1200K

32) Give the uses of zinc.

33) Explain the electrometallurgy of aluminium

34) Explain the following terms with suitable examples.
(i) Gangue
(ii) slag

35) Give the basic requirement for vapour phase refining.

36) Explain calcination with an example.

37) What is the role of depressants in froth flotation process?

38) What is auto-reduction?

7 x 5 = 35

39) Describe the role of the following in the process mentioned.
(i) Silica in the extraction of copper.
(ii) Cryolite in the extraction of aluminium.
(iii) Iodine in the refining of Zirconium.
(iv) Sodium cyanide in froth floatation.

40) Explain the principle of electrolytic refining with an example.

41) The selection of reducing agent depends on the thermodynamic factor: Explain with an example.

42) Give the limitations of Ellingham diagram

43) Write a short note on electrochemical principles of metallurgy.

44) Explain refming of titanium by Van-Arkel method.

45) What is zone refining? Describe the principle involved in the purification of the metal by this method.