

UNIT TEST-1 (METALLURGY)

CLASS : XII

SUB : CHEMISTRY

MARK : 70

TIME : 3.00 HRS

PART-I

I. Choose and write the correct answer :

15X1=15

1. Which of the following is used for concentrating ore in metallurgy? Match the following

| List - I | List - II |
|--------------|---|
| A) Diaspore | 1) ZnCO_3 |
| B) Magnetite | 2) PbSO_4 |
| C) Anglesite | 3) Fe_3O_4 |
| D) Calamine | 4) $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$ |

A B C D

A B C D

A B C D

A B C D

(a) 4 1 2 3

(b) 4 3 2 1

(c) 3 2 4 1

(d) 2 3 1 4

2. The metal which is used packing material for food items

(a) Zn

(b) Zr

(c) Al

(d) Au

3. Which of the following is the ore of copper

(a) Azurite

(b) Anglesite

(c) Cerrusite

(d) Argentite

4. Electrochemical process is used to extract

(a) Iron

(b) Lead

(c) Sodium

(d) silver

5. Cupellation is a process used for the refining of _____

(a) Silver

(b) Lead

(c) Copper

(d) Iron

6. Which one of the following is wrong pair

(a) Froth flotation-sulphide ores

(b) Magnetic separation-ferromagnetic ore

(c) Hydraulic wash-oxide ore

(d) none of these

7. Which one of the following reaction represents calcinations

(a) $2\text{ZnO} + \text{O}_2 \rightarrow 2\text{ZnO}$ (b) $2\text{ZnS} + 3\text{O}_2 \rightarrow 2\text{ZnO} + 2\text{SO}_2$ (c) $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$

(d) Both a and c

8. Wolframite ore is separated from tinstone by the process of

(a) Smelting

(b) Calcination

(c) Roasting

(d) Electromagnetic separation

9. Leaching process is a _____

(a) Reduction

(b) Dehydration

(c) Redox reaction

(d) Dehydrogenation

10. Which one of the element is not purified by zone refining ?

(a) Si

(b) Ge

(c) Ga

(d) Sc

11. In the electrolytic refining of copper, which one of the following is used as Cathode ?

(a) Pure copper

(b) Impure copper

(c) Carbon rod

(d) Platinum electrode

12. Bauxite has the composition
 (a) Al_2O_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
13. _____ is decompose on heating in the absence of a reducing agent
 (a) Ag_2O (b) Cr_2O_3 (c) ZnO (d) FeO
14. Which one of the metal is used for increasing the efficiency of solar cells
 (a) Fe (b) Cu (c) Au (d) Zn
15. The metal oxide which cannot be reduced to metal by carbon is
 (a) PbO (b) Al_2O_3 (c) ZnO (d) FeO

PART-II

II. Answer any six questions (q.no.24 is compulsory)

6 x 2 = 12

16. What is the role of limestone in the extraction of iron from its oxide Fe_2O_3 ?
17. Describe the role of the following in the process mentioned :
 i) Silica in the extraction of copper
 ii) Iodine in the refining of zirconium
18. What are the difference between Calcination and Roasting?
19. Give the limitations of Ellingham diagram
20. Which type of ores can be concentrated by froth floatation method? Give two examples for such ores
21. What is auto-reduction ? give example
22. What is cementation?
23. What is meant by concentration of ores ?
24. Give an example for the following in froth floatation process
 i) Frothing agent ii) Collector iii) Depressing agent

PART-III

III. Answer any six questions (q.no.33 is compulsory)

6 x 3 = 18

25. Explain the following terms with suitable examples
 i) Gangue ii) Slag iii) Flux
26. Distinguish between minerals and ores.
27. Explain the electrometallurgy of Aluminium
28. Write a note on electromagnetic separation
29. Write a note on gravity separation method ?
30. Explain Acid leaching with an example
31. Write the three application of aluminium
32. How Cr_2O_3 is reduced to Cr by Al powder
33. Write the formula for following ore
 i) Malachite ii) cassiterite iii) Haematite

PART-IV**IV. Answer all the questions .****5x5=25**

34. a) Describe the zone refining process? (5)

(OR)

b) Write a short note on electrochemical principles of metallurgy? (5)

35. a) i) Explain the refining process of nickel ? (3)

ii) What are the various steps involved in extraction of pure metals from their ores? (2)

(OR)

b) i) Explain about cyanide leaching ? (3)

ii) What is Ellingham diagram ? (2)

36. a) Explain concentration of ore by froth flotation method ? (5)

(OR)

b) i) write any three main observations of Ellingham diagram? (3)

ii) Write the two applications of zinc ? (2)

37. a) Explain the principle of electrolytic refining with an example ? (5)

(OR)

b) i) Give the basic requirements for vapour phase refining ? (2)

ii) explain extraction of copper from copper pyrites ? (3)

38. a) i) Write a note on blister copper ? (1)

ii) Explain the alkali leaching of bauxite ore ? (4)

(OR)

b) i) Explain refining of titanium by van-arkel method ? (3)

ii) How is metal purified by distillation method ? give example (2)

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