ALPHA MATRIC. HR. SEC. SCHOOL | ALPHA NEXTGEN CAMPUS

Redhills | Chennai

UNIT TEST I -2021

MAXIMUM : 50MARKS **STD : XII**

SUB:CHEMISTRY **TIME:1 1/2 HRS**

PART – I

I)CHOOSE THE CORRECT ANSWER **10X1=10**

1.Bauxite has the composition----------

a) Al_2O_3 b) $Al_2O_3.\ nH_2O$ c) $Fe_2O_3.\ H_2O$ d) None of these

2. Which one of the following reactions represents calcinations----------

a) $2Zn + O_2 \rightarrow 2ZnO$ b) $2ZnS + 3O_2 \rightarrow 2ZnO + 2SO_2$

c) $MgCO_3 \rightarrow MgO + CO_2$ d) Both (a) and (c)

3. Which of the metal is extracted by Hall-Heroult process----------

a) Al b) Ni c) Cu d) Zn

4. Electrochemical process is used to extract----------

a) Iron b) Lead c) Sodium d) silver

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

a) Magnetite b) Hematite c) Galena d) Cassiterite

6. A zero order reaction X P → product, with an initial concentration 0.02M has a half-life of 10 min. If one starts with concentration 0.04M, then the half-life is----------

a) 10 s b) 5 min c) 20 min d) cannot be predicted using the given information

7. The decomposition of phosphine (PH3) on tungsten at low pressure is a first order reaction. It is because the----------

a) rate is proportional to the surface coverage

b) rate is inversely proportional to the surface coverage

c) rate is independent of the surface coverage

d) rate of decomposition is slow

8. The addition of a catalyst during a chemical reaction alters which of the following quantities----------

a) Enthalpy b) Activation energy c) Entropy d) Internal energy

9. The rate constant of a reaction is $5.8 \times 10^{-2} S^{-1}$. The order of the reaction is----------

a) First order b) zero order c) Second order d) Third order

10. After 2 hours, a radioactive substance becomes $\left(\frac{1}{16}\right)^{th}$ of original amount. Then the half-life (in min) is----------

a) 60 minutes b) 120 minutes c) 30 minutes d) 15 minutes

II. Answer any six of the following.

(Q.No. 18 is compulsory.) **6 x 2 = 12**

11. What are the various steps involved in extraction pure metals from their ores?

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

13. Give the uses of zinc.

14. What is the role of silica in the extraction of copper.

15.Define average rate and instantaneous rate.

16.Write the rate law for the following reactions.

a) A reaction that is 3/2 order in x and zero order in y.

b) A reaction that is second order in NO and first order in Br_2.

17. Write Arrhenius equation and explain the terms involved.

18. Identify the order for the following reactions.

i. Radioactive disintegration of $_{92}U^{238}$

ii. $2A + 3B \rightarrow$ products; rate = $k [A]^{1/2}[B]^2$

III. Answer any six of the following.

(Q.No. 26 is compulsory.) **6 x 3 = 18**

19. What are the differences between minerals and ores?

20. Describe a method for refining nickel.

21. Give the limitations of Ellingham diagram.

22. Explain the principle of electrolytic refining with an example.

23. Give the differences between order and molecularity.

24. Define half-life period. Derive the expression for the half life period for zero order reactions.

25. The rate constant for a first order reaction is $1.54 \times 10^{-3} S^{-1}$. Calculate its half life time.

26. Show that in case of first order reaction, the time required for 99.9% completion is nearly ten times the time required for half completion of the reaction.

IV. Answer the following questions. 2 x 5 = 10

27.(i) a. What is the role of limestone in the extraction of Iron from its oxide Fe_2O_3.

b. Explain zone refining process.

or

(ii) a. Explain the following terms with suitable examples.

a) Gangue b) Slag.

b. Explain the electrometallurgy of aluminum.

28. (i) a. What is an elementary reaction?

b. Derive integrated rate law for a zero-order reaction A → product.

Or

(ii) a. Explain Collision theory.