

DAV BORL PUBLIC SCHOOL, BINA

REVISION WORKSHEET FOR SA1 (2013-14)

Class :XII**Subject:****CHEMISTRY****General Instructions:**

- (i) All questions are compulsory
- (ii) There are 30 questions in all. Questions 1 to 8 carry one mark each, questions 9 to 18 carry two marks each, questions 19 to 27 carry three marks each and questions 28 to 30 carry five marks each.
- (iii) There is no overall choice. However, an internal choice has been provided in one question of two marks, one question of three marks and all the three questions of five marks each.
- (iv) Use log table, if necessary. Use of calculator is not permitted.

1. What type of stoichiometric defect is shown by ZnS? 1
2. Give one example of solution which forms minimum boiling azeotrope. 1
3. Why are powdered substances more effective adsorbents than their crystalline forms? 1
4. What happens when sodium chloride is added to ferric hydroxide solution? 1
5. Write the reaction of thermal decomposition of sodium azide. 1
6. What is the basicity of H_3PO_4 ? 1
7. Write the electronic configuration of Cu^+ . 1
8. How many lattice points are there in one unit cell of face centered cubic? 1
9. A compound is formed by two elements A and B. Atoms of the element B (as anions) make ccp and those of the element A (as cations) occupy all the octahedral voids. What is the formula of the compound? 2
10. Draw a graphical diagram to show the elevation of boiling point of a solvent in solution and explain it. 2
11. The standard electrode potential for Daniell cell is 1.1V. Calculate the standard Gibbs energy for the reaction.

$$\text{Zn(s)} + \text{Cu}^{2+}(\text{aq}) \longrightarrow \text{Zn}^{2+}(\text{aq}) + \text{Cu(s)}$$
 2
12. Explain the adsorption theory of heterogeneous catalysis. 2
13. Although thermodynamically feasible, in practice, Mg is not used for the reduction of alumina in the metallurgy of aluminium. Why? 2
14. Write the Haber's process for manufacturing of ammonia. 2
15. Give the reason for bleaching action of chlorine. 2
16. On what ground can you say that scandium ($Z=21$) is a transition element but zinc ($Z=30$) is not. 2
17. Which is a stronger reducing agent Cr^{2+} or Fe^{2+} and why? 2
18. Write the IUPAC names of the following coordination compounds-(i) $[\text{Pt}(\text{NH}_3)_2\text{Cl}(\text{NO}_2)]$ 2



OR

Write the formulae for the following coordination compounds- (i)

Potassium tetrahydroxozincate(II)

(ii) Tetraamineaquachloridocobalt(III) chloride

- 19.** Calculate the efficiency of packing in body centred cubic (assuming that atoms are touching each other). **3**
- 20.** During rusting of iron, an electrochemical cell is set up. Explain it **3**
- 21.** A voltaic cell is constructed, from a half cell in which a cadmium rod dips into a solution of cadmium nitrate, $\text{Cd}(\text{NO}_3)_2$ and another half cell in which a silver rod dips into a solution of silver nitrate AgNO_3 . The two half cells are connected by a salt bridge. Answer the following questions **3**
- (i) Student is confused, which one of the two cells will be anode? What is the value associated with it? Give your opinion to assist the student.
- (ii) Write down electrode process and give the direction of flow of electron in the external circuit.
- 22.** (i) For a reaction $\text{A} + \text{B} \rightarrow \text{product}$, The rate law is given by $r = k [\text{A}]^{1/2} [\text{B}]^2$. What is the order of the reaction? **3**
- (ii) Differentiate between order and molecularity of reactions.
- OR
- (i) How can the temperature effect on rate constant of a chemical reaction?
- (iii) Describe the collision theory of chemical reaction
- 23.** Explain the following – **3**
- (i) Brownian movement
- (ii) Tyndal effect
- (iii) Electrophoresis
- 24.** Outline the principles of refining of metals by the following methods - **3**
- (i) Zone refining
- (ii) Electrolytic refining
- (iii) Vapour phase refining
- 25.** Arrange the following in the order of property indicated for each set : **3**
- (i) $\text{F}_2, \text{Cl}_2, \text{Br}_2, \text{I}_2$, -increasing bond dissociation enthalpy
- (ii) $\text{HF}, \text{HCl}, \text{HBr}, \text{HI}$ -increasing acid strength
- (iii) $\text{NH}_3, \text{PH}_3, \text{AsH}_3, \text{SbH}_3, \text{BiH}_3$ -increasing basic strength
- 26.** Write the steps in the preparation of $\text{K}_2\text{Cr}_2\text{O}_7$ from chromite ore. Represent its oxidizing action in acidic solution **3**
- 27.** Explain on the basis of valence bond theory that $[\text{Ni}(\text{CN})_4]^{2-}$ ion with square planar structure i.e diamagnetic and the $[\text{NiCl}_4]^{2-}$ ion with tetrahedral geometry is paramagnetic . **3**
- 28.** (i) Define osmotic pressure of the solution . **5**
- (ii) Derive the relation between the osmotic pressure of solution and molar mass of the solute .
- (iii) 200cm³ of an aqueous solution of a protein contains 1.26gm of the

protein . The osmotic pressure of such a solution at 300K is found to be 2.57×10^{-3} bar. Calculate the molar mass of the protein

OR

- (i) What do you mean by colligative property? 5
- (ii) Show that relative lowering of vapour pressure is a colligative property.
- (iii) The vapour pressure of pure benzene at a certain temperature is 0.850 bar .A non volatile non electrolyte solid weighing 0.5gm when added to 39.0gm of benzene (molar mass 78gm/mol). Vapour pressure of the solution ,then is 0.845 bar .What is the molar mass of the solid substance?

29. (i) Derive the integrated rate equation for first order reaction (ii) Plot 5
a graph for this expression .
(iii) The initial concentration of N_2O_5 in the following first order reaction $\text{N}_2\text{O}_5(\text{g}) \longrightarrow 2\text{NO}_2(\text{g}) + \frac{1}{2} \text{O}_2(\text{g})$ was 1.24×10^{-2} mol/lit.at 318K .The concentration of N_2O_5 after 60 mins was 0.20×10^{-2} mol/lit. Calculate the rate constant of the reaction at 318 K .

OR

- (i) What do you mean by half life of a reaction?
- (ii) Show that half life of the first order reaction is independent of initial concentration of reactant.
- (iii) Show that in a first order reaction ,time required for completion of 99.9% is ten times of half life of the reaction .

30. (a) Give reasons :
 (i) Noble gases have comparatively large atomic sizes .
 (ii) Halogens are coloured .
 (iii) NH_3 forms hydrogen bond but PH_3 does not .
 (b) Draw the structure of –
 (i) ICl_4^- (ii) BrO_3^-

OR

- (a) Give reasons
 (i) Pentahalides are more covalent than trihalides.
 (ii) NH_3 acts as a lewis base
 (iii) H_2O is a liquid but H_2S is a gas.

- (b) Draw the structure of :

- (i) H_2SO_4 (ii) H_2SO_3

Given : $E^\circ_{\text{Ag}^+/\text{Ag}} = 0.80 \text{ V}$, $E^\circ_{\text{Mg}^+/\text{Mg}} = 0.79 \text{ V}$
 $E^\circ_{\text{Cu}^+/\text{Cu}} = 0.34 \text{ V}$, $E^\circ_{\text{Hg}^+/\text{Hg}} = 0.92 \text{ V}$

Which of the following statement(s) is/are incorrect?

- (a) AgNO_3 can be stored in a copper vessel.
- (b) $\text{Cu}(\text{NO}_3)_2$ can be stored in a magnesium vessel.
- (c) CuCl_2 can be stored in a silver vessel.
- (d) HgCl_2 can be stored in a copper vessel.