



Class: XI	Department: SCIENCE 2020 – 21 SUBJECT: CHEMISTRY	Date of submission: 05.12.2020
Worksheet No: 09 WITH ANSWERS	Chapter: HYDROGEN	Note: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

MULTIPLE CHOICE QUESTIONS (1 M)

1. Which of the following hydrides is electron-precise hydride?
 - a. B_2H_6
 - b. NH_3
 - c. H_2O
 - d. CH_4
2. Metal hydrides are ionic, covalent or molecular in nature. Among LiH, NaH, KH, RbH, CsH, the correct order of increasing ionic character is
 - a. $LiH > NaH > CsH > KH > RbH$
 - b. $LiH < NaH < KH < RbH < CsH$
 - c. $RbH > CsH > NaH > KH > LiH$
 - d. $NaH > CsH > RbH > LiH > KH$
3. Which of the following ions will cause hardness in water sample?
 - a. Ca^{2+}
 - b. Na^+
 - c. Cl^-
 - d. K^+
4. Which of the following compounds is used for water softening?
 - a. $Ca_3(PO_4)_2$
 - b. Na_3PO_4
 - c. $Na_6P_6O_{18}$
 - d. Na_2HPO_4
5. Which group forms metallic hydrides?
 - a. Group 5
 - b. Group 7
 - c. Group 8
 - d. Group 9
6. Which of the following statements is correct?
 - a. Hydrides of group 13 act as Lewis bases.
 - b. Hydrides of group 14 are electron deficient hydrides.
 - c. Hydrides of group 14 act as Lewis acids.
 - d. Hydrides of group 15 act as Lewis bases.

7. Hydrogen resembles halogens in many respects for which several factors are responsible. Of the following factors, which one is most important in this respect?
- Its tendency to lose an electron to form a cation.
 - Its tendency to gain a single electron in its valence shell to attain stable electronic configuration.
 - Its low negative electron gain enthalpy value.
 - Its small size.
8. _____ is an example of H bonded water.
- $\text{Cr}(\text{H}_2\text{O})_6]^{3+} \cdot 3\text{Cl}^-$
 - $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
 - $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$
 - $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$
9. The nuclei of tritium (H^3) atom would contain _____ neutrons
- 1
 - 2
 - 3
 - 4
10. Assertion: Permanent hardness of water is removed by treatment with washing soda.
Reason: Washing soda reacts with soluble magnesium and calcium sulphate to form insoluble carbonates.
- Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.
 - Both Assertion and Reason are true and Reason is not the correct explanation of the Assertion.
 - Assertion is true but Reason is false.
 - Reason is true but Assertion is false.

SHORT ANSWER TYPE (2M)

11. What is the difference between the terms - hydrolysis and hydration? Give an example of a hydrated compound?
12. Name one compound that causes (i) temporary hardness (ii) permanent hardness.
13. Give reason for the following statements.
- Sea water cannot be used in boilers.
 - Water is an excellent solvent for substances.

SHORT ANSWER TYPE (3M)

14. Account for the following.
- Ice floats on water.
 - Sugar and salt are soluble in water.
 - Hard water is unsuitable for washing purposes.

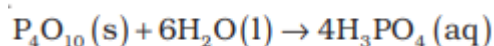
LONG ANSWER TYPE QUESTIONS (5M)

15. a. Give an example each of (i) saline hydride (ii) electron rich hydride
b. BH_3 is acidic whereas NH_3 is basic in nature. Give reason.
c. Justify the position of H in the periodic table.

16. a. Explain any three methods of removal of permanent hardness of water.
b. Describe the following.
i. Clarks method
ii. Boiling

Hint
1. d
2. b
3. a
4. c
5. a
6. d
7. b
8. b
9. b
10. a

11. Hydrolysis is any chemical reaction in which a molecule of water ruptures one or more chemical bonds.

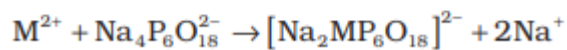
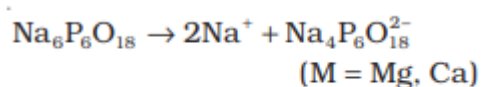


Hydration is the adding of water molecules to a chemical substance. e.g $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$

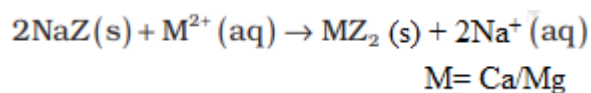
12. i. $\text{Ca}(\text{HCO}_3)_2 / \text{Mg}(\text{HCO}_3)_2$
ii. $\text{CaCl}_2 / \text{MgCl}_2 / \text{CaSO}_4 / \text{MgSO}_4$
13. a. Due to deposition of salts in the form of scale.
b. Ionic compounds dissolve due to polar nature. Covalent compounds dissolve due to H bond formation.
14. a. Hydrogen bonding gives ice a rather open type structure with wide holes. These holes can hold some other molecules of appropriate size interstitially. Hence lighter and floats.
b. Salt dissolves due to polar nature. Sugar dissolves due to H bond formation.
c. Due to scum formation. Explanation
15. a. i. NaH
ii. NH_3
b. BH_3 – electron deficient hydride- electron acceptor
 NH_3 – electron rich hydride- electron pair donor

- c. Due to similarity between H and alkali metals as well as halogen.
 Difference between H and alkali metals as well as halogen.
 Unique position in the periodic table.

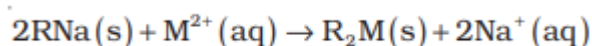
16. a. i. Calgon method



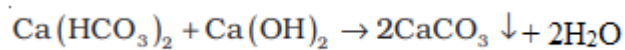
ii. Zeolite method



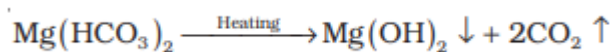
iii. Synthetic resins method



b. i. Clarks method



ii. Boiling



Prepared by : Ms. Jasmin Joseph	Checked by : HOD - SCIENCE
---------------------------------	----------------------------