**DELHI PUBLIC SCHOOL NEWTOWN**
**SESSION 2023-24**
**MONDAY TEST**

**CLASS: IX**                                                              **FULL MARKS: 40**
**SUBJECT: CHEMISTRY**                                          **DATE: 28.11.2023**

**General Instructions:**
- **The paper consists of <u>three</u> printed pages.**
- **Read the questions very carefully.**
- **Answers should be to the point.**
- **Question numbers should be copied carefully while answering the questions.**

**SECTION A**
*(Attempt all questions)*

**Question 1**

**Choose the correct answers to the questions from the given options.**
**(Do not copy the question, write the correct answers only)**                    **[8]**

   (i)      **Which of the following are true for an element?**

   **P: Atomic number = p + e**
   **Q: Mass no. = p + n**
   **R: Atomic mass = p=n**
   **S: Atomic number = p= e**

   (a) **P and Q**
   (b) **P and R**
   (c) **Q and R**
   (d) **Q and S**

   (ii)     **$Cu^+$ and $Cu^{2+}$ will have:**

   (a) **same number of protons and same number of electrons**
   (b) **$Cu^+$ will have greater number of protons than in $Cu^{2+}$**
   (c) **$Cu^+$ will have less number of protons than in $Cu^{2+}$**
   (d) **$Cu^{2+}$ will have less number of electrons than in $Cu^+$**

   (iii)    **An atom $_{19}X^{39}$ having unstable electronic configuration forms a compound with $_8Y^{16}$. The bond formed between X and Y is _____ and the formula of the compound is _____.**

   (a) **Electrovalent, $X_2Y$**
   (b) **Ionic, $XY_2$**
   (c) **Covalent, $X_2Y$**
   (d) **Covalent, $XY_2$**

   (iv)     **A compound X consists of only molecules. Hence, X will:**

   (a) **Have low melting point and boiling point**
   (b) **Form an ionic compound**
   (c) **Be a crystalline hard solid**
   (d) **Have a strong force of attraction between the molecules**

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(v)     An element X belongs to the 3$^{rd}$ period and group1 of the periodic table. What is the number of valence electrons in its atom?

(a) 1
(b) 3
(c) 6
(d) 8

(vi)    Name the neutral atom in the periodic table which has the same number of electrons as K$^+$ and Cl$^-$ (At.nos. of K=19, Cl=17, He=2, Ne=10, Ar=18, Kr=36)

(a) Helium
(b) Argon
(c) Neon
(d) Krypton

(vii)   The percentage mass of water in washing soda crystals is:
        (Na=23, C=12, O=16, H=1)

(a) 72.9
(b) 62.9
(c) 6.29
(d) 92.6

(viii)  The ion of an element has two negative charges. The mass number of the atom of this element is 16 and the number of neutrons is 8. The arrangement of electrons in this ion is: :

(a) 2, 6
(b) 2, 8
(c) 2, 8, 8
(d) 2, 8, 2

**Question 2**

(i)     The position of the three elements A, B and C in the modern periodic table is as follows:                                                                         [5]

|   | 1 | 2 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|----|----|----|----|----|----|
| 1 | B |   |    |    |    |    |    |    |
| 2 |   |   |    |    |    |    | A  |    |
| 3 |   |   |    |    |    | C  |    |    |

(a) Write the formula of the compound formed between:  (i) B and A   (ii) B and C.
(b) What type of compound will A form with non metals?
(c) Which of the above element is divalent?
(d) Give the formula of the oxide of B.

(ii)    Account for the following written statements:                                  [5]

(a) Alkali metals are strong oxidising agents.
(b) Methane is a non polar covalent molecule.
(c) Hydrogen has been placed at the top of Group1.
(d) Carbon-12 and Carbon-14 both show similar chemical properties.
(e) Dobereiner's law of triads was discarded.

(iii) Represent the following as stated: **[2]**

(a) Electron dot and cross diagram for the formation of compound formed between X and Y having atomic numbers 9 and 11 respectively.

(b) Orbit diagram of methane molecule.

## SECTION B
*(Attempt all questions)*

## Question 3

(i) Find the percentage of carbon in sodium acetate. (Na=23, C=12, O=16, H=1) **[2]**

(ii) Two elements A and B belong to the 3rd period of the Modern Periodic Table and are in Group 2 and 13 respectively. Compare the following characteristics in the tabular form: **[2]**

  (a) Formula of their chlorides

  (b) Number of electrons in their atoms

(iii) Name the periods that contain the inner transition elements. **[1]**

## Question 4

An atom X has 1 electron in the valence shell (N shell). State: **[5]**

(i) The formula of its silicate.

(ii) The position in the periodic table.

(iii) What type of compound will it form with Y having atomic number 17.

(iv) Write the formula of the compound X forms with an element Z with 6 electrons in the valence shell.

(v) Draw the electron dot and cross diagram to represent the formation of the compound stated in (iv) above.

## Question 5

(i) In 1865, John Newlands arranged all known elements in the order of increasing atomic masses and found that the properties of every eighth element are similar to the properties of the first element. **[3]**

(a) If CI, Br, I is a Dobereiner's triad and the atomic masses of CI and I are 35.5 and 127 respectively, then the atomic mass of Br is_____ .

(b) A and B are two elements having similar properties which obey Newlands' law of octaves. How many elements are there in between A and B?

(c) According to the Newlands' law of octaves, the properties of magnesium are similar to those of_____ .

(ii) Identify the following: **[2]**

(a) The position of an element having atomic number 9.

(b) The actual name of eka-boron.

## Question 6

(a) How does the number of: (i) valence electrons and (ii) number of shells vary down a group? **[2]**

(b) Name a covalent molecule having two lone pair of electrons. Draw the electron dot and cross diagram for the formation of the molecule stated. **[2]**

(c) State the Modern Periodic Law. **[1]**