CBSE

ATOMS AND MOLECULES WS 2

Class 09 - Science

Section A

1. Symbol of Iron is:- **[1]**

   a) Ir
   b) Fe
   c) Mg
   d) I

2. A change in the physical state can be brought about **[1]**

   a) when energy is either given to, or taken out from the system
   b) without any energy change
   c) only when energy is taken out from the system
   d) only when energy is given to the system

3. The chemical symbol for sodium is **[1]**

   a) Sd
   b) K
   c) So
   d) Na

4. **Assertion (A):** The atoms of a given element are identical in mass and chemical properties. **[1]**
   Reason (R): Atoms of different elements have different masses and chemical properties.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.

5. **Assertion (A):** 1amu equals to 1.6×10^{-24} g. **[1]**
   Reason (R): 1.6×10^{-24} g. equals to $\frac{1}{12}$th of mass of a C-12 atom.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.

6. **Assertion (A):** Atoms of a few elements exist in the free state. **[1]**
   Reason (R): Most elements, being chemically reactive exist as molecules or ions.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.

7. **Assertion (A):** Carbon-12 atom has been assigned an atomic mass of exactly 12 atomic mass units. **[1]**
   Reason (R): The atomic mass unit should be equal to one-twelfth of the mass of a carbon-12 atom.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

8. **Assertion (A):** Atomic mass of aluminium is 27. **[1]**

Reason (R): An atom of aluminium is 27 times heavier than $\frac{1}{12}$th of the mass of carbon-12 atom.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

9. **Assertion (A):** Earlier, hydrogen was taken as a standard for measuring the atomic masses of elements. **[1]**

Reason (R): Later, carbon-12 isotope was chosen as a standard for measuring the atomic masses of elements.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

10. **Assertion (A):** Berzelius was the first scientist to use symbols for elements. **[1]**

Reason (R): He suggested that the symbols of the elements can be made from one to two letters of the name of the element.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

11. **Assertion (A):** One atomic mass unit (amu) is mass of an atom equal to exactly one-twelfth the mass of a carbon-12 atom. **[1]**

Reason (R): Carbon-12 isotope was selected as standard.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

12. **Assertion (A):** An atom is very huge in size. **[1]**

Reason (R): About one million atoms are stacked together to equal the thickness of a sheet of paper.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

13. **Assertion (A):** We use names and symbols as stated by IUPAC. **[1]**

Reason (R): Many symbols are the last letter or the last two letters of the name of the element.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

14. Match the following with correct response: **[1]**

(1) Instrument used to produce images of atoms	(A) STM
(2) Atomic theory of matter	(B) Fullerene
(3) An allotrope of carbon	(C) John Dalton

(4) Potassium Sulphate	(D) Compound

a) 1-C, 2-B, 3-D, 4-A

b) 1-A, 2-C, 3-B, 4-D

c) 1-B, 2-D, 3-A, 4-C

d) 1-D, 2-A, 3-C, 4-B

15. Match the following with correct response: **[1]**

(1) Cobalt	(A) Na
(2) Copper	(B) Cu
(3) Sulphur	(C) Co
(4) Sodium	(D) S

a) 1-B, 2-D, 3-A, 4-C

b) 1-D, 2-A, 3-C, 4-B

c) 1-A, 2-C, 3-B, 4-D

d) 1-C, 2-B, 3-D, 4-A

16. Which of the following statement is true? **[1]**

Statement A: Atoms can exist independently.

Statement B: The law of constant proportions is applicable only to pure chemical compounds.

a) Statement A

b) Both statement A and statement B

c) Neither statement A nor statement B

d) Statement B

17. Which of the following statements is not true about an atom? **[1]**

a) Atoms aggregate in large numbers to form the matter that we can see, feel or touch

b) Atoms are always neutral in nature

c) Atoms are the basic units from which molecules and ions are formed

d) Atoms are not able to exist independently

18. Identify the incorrect statement(s). **[1]**

a) Atoms of the same element may have different masses.

b) Atoms of different elements may have same masses.

c) None of these

d) Atoms have been found to be made up of sub-atomic particles.

19. How did Berzelius assign symbols to the elements? **[1]**

20. What is Dalton? **[1]**

21. Express each of the following in kilograms: **[1]**

a. 5.84×10^{-3} mg

b. 58.34 g

c. 0.584 g

d. 5.873×10^{-21} g

22. Define atomic mass unit **[1]**

Section B

23. Define the atomic mass unit. **[2]**

24. Calculate the mass of one atom of hydrogen atom. **[2]**

25. Why is it not possible to see an atom with naked eyes? **[2]**

26. Why is not possible to see an atom with naked eye? **[2]**

27. What is basic difference between atoms and molecules? **[2]**

28. Which of the following elements A, B, C and D would you expect to be the most stable and why? Atomic number is given in brackets. A(8) , B(9), C (10), D(2). **[2]**

29. The atomic mass of an element is in fraction. What does it mean? **[2]**

30. Why does not the atomic mass of an element represent the actual mass of its atom? **[2]**

31. How big are atoms? Explain it. **[2]**

Section C

32. **State True or False:** **[3]**

    (a) Elements are the purest form of matter. **[1]**

    (b) The symbols of iron are Ir. **[1]**

    (c) The radius of an atom of hydrogen is 10^{-9} m or 10^{-2} nm. **[1]**

33. Dalton's atomic theory is contradicted by the formula of sucrose $C_{12}H_{22}O_{11}$. Justify the statement. **[3]**

Section D

34. **Fill in the blanks:** **[5]**

    (a) _____ isotope was chosen as a standard for measuring the atomic masses of elements. **[1]**

    (b) A _____ is a thing (letter or a sketch) which represents or stands for something else. **[1]**

    (c) A _____ can be defined as the smallest particle of an element or a compound that is capable of independent existence and shows all the properties of that substance. **[1]**

    (d) _____ was the first scientist to use the symbols for elements in a very specific sense. **[1]**

    (e) The building blocks of all matter are the _____. **[1]**