1. According to the given reaction:

$$\underset{10.0\,g}{CaCO_{3(s)}} \xrightarrow{\Delta} \underset{5.6\,g}{CaO_{(s)}} + \underset{xg}{CO_{2(g)}}$$

What is the value of x ?

(a) 10.0 (c) 4.4 (b) 5.6 (d) 10.11

2. Some elements along with their symbols are enlisted in the given table :

Elements					
(i)	Argon-Ar	(iv)	Lead-Pd	(vii)	Potassium-P
(ii)	Iron – I	(v)	Gold – Au	(viii)	Sodium – S
(iii)	Chlorine - CI	(vi)	Magnesium – Ma	(ix)	Zinc-Zn

Identify the incorrect representation of symbols.

(a) (iv), (v) and (vi) (b) (i), (ii), (iv), (v) and (ix)

(c) (ii), (vi), (vii) and (viii) (d) (iii), (vi) and (viii)

3. Calculate the number of gram atoms in $360\,g$ of magnesium.

(a) 15 (b) 12 (c) 20 (d) 18

4. How do atoms exist?

(a) Atoms of most elements are not able to exist independently.

(b) Atoms form molecules and ions.

(c) The molecules or ions aggregate in large numbers to form the matter that we can see, feel or touch.

(d) All of these

5. The relative atomic mass of sodium is

(a) the mass of one sodium atom

(b) the mass of one sodium ion

(c) the mass of one sodium atom compared with one twelfth the mass of one carbon-12 atom

(d) the average mass of one sodium atom compared with one twelfth the mass of one carbon-12 atom.

6. Identify the incorrect statement.

(a) The ratio by number of atoms for water is $H:O=2:1$.

(b) Ratio by mass of atoms present in ammonia is $N:H=17:3$.

(c) Ratio by mass of atoms present in carbon dioxide is $C:0=3:8$

(d) All the statements are correct.

7. The number of atoms in $K_2Cr_2O_7$ is

(a) 9 (b) 11 (c) 10 (d) 12

8. The formula of chloride of a metal M is MCl_3, then the formula of the phosphate of metal M will be

(a) MPO_4 (b) M_2PO_4 (c) M_3PO_4 (d) $M_2(PO_4)_3$

9. How many elements are present in one formula unit of $Al(OH)_3$?

(a) 3 (b) 4 (c) 5 (d) 6

10. The chemical symbol for nitrogen gas is
(a) Ni (b) N_2 (c) N^+ (d) N

11. Which of the following would weigh the highest?
(a) 0.2 mole of sucrose $(C_{12}H_{22}O_{11})$ (b) 2 moles of CO_2
(c) 2 moles of $CaCO_3$ (d) 10 moles of H_2O

12. Which of the following has maximum number of atoms?
(a) 18g of H_2O (b) 18g of O_2 (c) 18g of CO_2 (d) 18g of CH_4

13. A change in the physical state can be brought about
(a) only when energy is given to the system
(b) only when energy is taken out from the system
(c) when energy is either given to, or taken out from the system
(d) without any energy change.

Assertion-Reason Codes:

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true and Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.

14. Assertion: Atomicity of oxygen is 2.
Reason: 1 mole of an element contains 6.023×10^{23} atoms.

15. Assertion: The molecular mass and formula unit mass of a substance is the sum of atomic masses of all the atoms in the molecular formula or formula unit of a compound.
Reason: The only difference between the molecular mass and formula unit mass is that, former is for molecular compounds (covalent compounds) and latter is for ionic compounds. However, their numerical value is the same.

16. Assertion: One mole of molecules has mass equal to gram molecular mass and contains Avogadro's number of molecules or has a volume of 22.4L at STP if the substance is a gas.
Reason: One mole of an ionic compound has mass equal to gram formula unit mass and contains Avogadro's number of formula units.

17. Assertion: Law of conservation of mass holds good for nuclear reactions.
Reason: It states that energy can neither be created nor destroyed in a chemical reaction.

18. Assertion: Molecules of some elements are very big in size containing a large number of atoms linked together. Reason: The properties of any such solid element are in fact, not the properties of its single atom but the properties of the cluster of atoms.

19. Assertion: 1L of O_2 gas and 1L of O_3 gas contain the same number of moles under identical conditions.
Reason: Under identical conditions, 1L of O_2 gas and 1L of O_3 gas contain the same number of oxygen atoms.