1. Nitrogen is an invisible element for plant growth.

a. Write down any one method by which atmospheric nitrogen reaches the soil.
b. Write any two other uses of nitrogen

2. A few granules of zinc are added to a test tube containing hydrochloric acid.

a. Which is the gas formed by the reaction?
b. Which is the product formed when this gas is burnt in air?

3. In an atom of element x, there are 3 shells and 2 electrons in its outermost shell.

a. Write down the electronic configuration of this element
b. Find the period and group of this element
c. What is the valency shown by this element?

4. Hydrogen is known as the fuel of the future.

a. Write any two advantages of hydrogen as a fuel
b. Despite these advantages, hydrogen is not usually used as a fuel. Why?

5. Amongst the metals Aluminium, Zinc and Iron, which metal is used for:

a. Protecting iron from rusting
b. Making thin foils for packaging industry
c. The construction of machinery

6. Write the formula for the following compounds.

a. Aluminium hydroxide (b) Potassium Permanganate (c)Sodium meta aluminate

7. State two differences between roasting and calcination

8. At constant temperature a gas is at a pressure of 1080mm Hg. if the volume is decreased by 40%, find the new pressure of gas.

9. Define absolute zero. Why is it a theoretical concept?

10. (a) Name the chief ore of aluminium
(b) Name the process used to concentrate the above mentioned- ore
(c)Give cathode and anode reactions involved in the extraction of aluminium from its above mentioned ore
(d)Name the process used for concentration of zinc blende

11. State the composition of brass and solder

12. At what temperature will 500cm^3 of a gas measured at 20ºC occupy half its volume? The pressure is kept at constant.

13. State 3 important functions performed by respiration in the body.

14. Name 2 acid anhydrides and the corresponding hydrides formed by them

15. A neutralisation reaction is given: $NaOH + HCl \rightarrow NaCl + H_2O$

a. Which among the substances have lowest p^H value?
b. What is the p^H value of NaCl solution?

16. Sodium carbonate and sodium bicarbonate are two salts used in daily life.

a. Write down the chemical formula of sodium bicarbonate
b. Write down any one use of sodium carbonate
c. Which is the gas formed by the reaction of carbonates with acids
d. Write down any one consequence of the increase in the concentration of this gas in the atmosphere

17. Electronic configurations of elements P, Q and R are given:
P-2, 1
Q- 2,8, 2
R- 2, 8, 6

a. Which of the above elements belong to the same period?
b. Which amongst the elements have the highest electronegativity?
c. Write down the chemical formula of the compound formed by P and R

18. Molecular formula of some compounds is given here.

(i) C_3H_8 (ii) C_3H_4 (iii)C_3H_6 (iv) C_3H_8O

a. Which among the above is an alkane?
b. Write the general formula of the category of hydrocarbons to which Q belongs.
c. Write down the formula of the next homologue of R

19. Ammonia is catalytically oxidized with oxygen.

a. Name the catalyst
b. Write a balanced chemical equation for the catalytic oxidation of Ammonia
c. Write the industrial process that starts the catalytic oxidation of Ammonia
d. Name the drying agent used in the laboratory preparation of Ammonia

20. When substance A is heated, a reddish brown gas is evolved, this rekindles a glowing wooden splinter. A yellow residue is left in the test tube.

a. Name the reddish brown gas
b. Name the gas that relights a glowing splinter