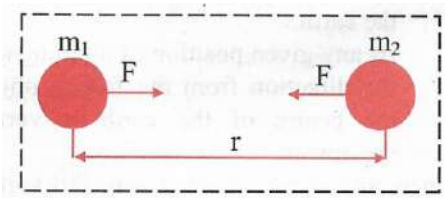
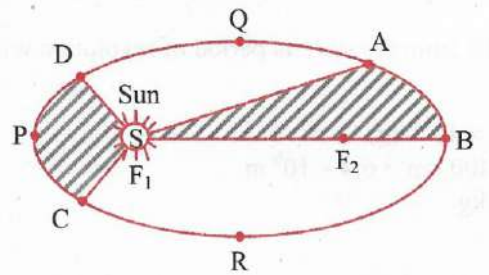
Questions based on Diagrams

Q.1 Observe the following diagram and answer the questions. 5 Marks



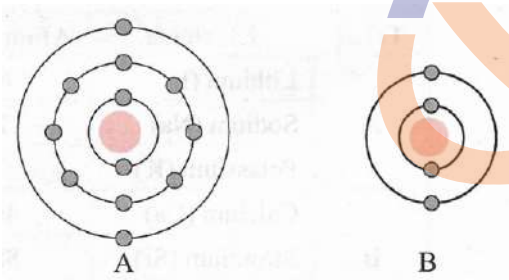
i) Which law do we understand from the above diagram? State the law.
ii) State the mathematical equation for the law.
iii) In case the two bodies are not spherical, then in which direction is the force directed?
iv) How will the value of force F change if the mass m2 is increased to 4m2?
v) How will the value of force F change if the distance r is doubled?

Q.2 The figure shows the elliptical orbit of a planet about the Sun S. An ellipse is the curve obtained when a cone is cut by an inclined plane. It has two focal points. The sum of the distances to the two focal points from every point on the curve is constant. F1 and F2 are the two focal points of the ellipse. The shaded area CF1D is twice the shaded area AF1B. t1 is the time taken by the planet to move from C to D and t2 is the time to move from A to B.



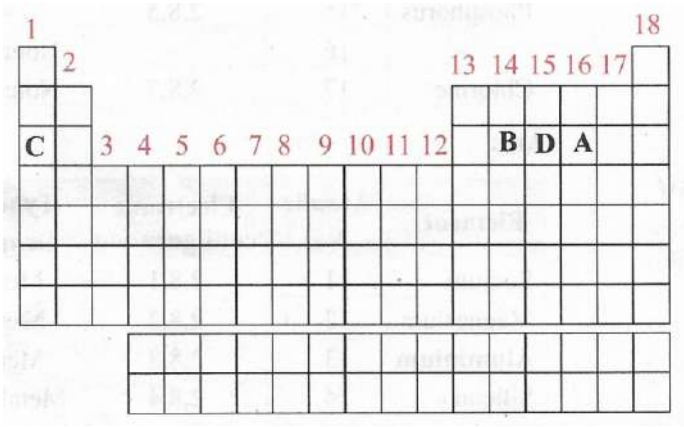
a) Which laws do we understand from the above diagram and description?
b) State the law regarding areas swept by the line joining the planet and the Sun.
c) State the law regarding the time period of revolution of a planet.
d) Out of the following points P, Q, R, B; at which point will the velocity of the planet be maximum?
e) Express relation between t1 and t2.

Q.3 Atoms of two different elements are represented in the following diagram.



i) Identify elements A and B.
ii) Do these elements belong to the same group? Justify your answer.
iii) Which element is more electropositive? Explain with reason.

Q.4 Study the following periodic table in which four elements are indicated by alphabets: A, B, C and D.



i) Which element is a metalloid? Name this element.
ii) Among 'C' and 'D' which element has larger atomic radius?
iii) Identify element 'A' and write its electronic configuration.

Q.5 A part of periodic table is shown in following figure.

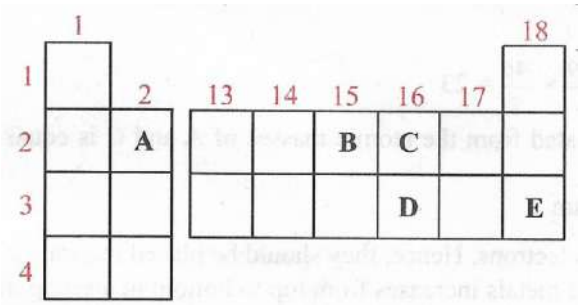
a) Write the symbol of the element 'B'.

b) Will elements 'C' and 'D' have same number of valence electrons?

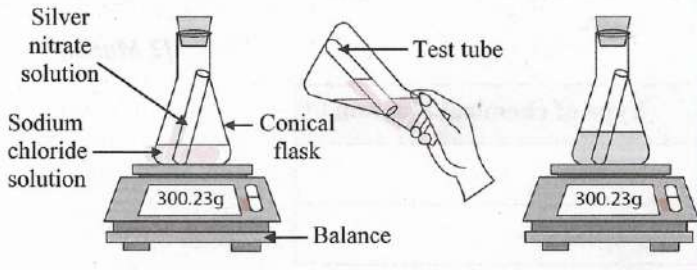
c) Arrange elements 'A', 'B' and 'C' in increasing order of their metallic character.

d) What is the number of electrons in L shell of element 'E'?

e) Name any two elements that will have properties similar to that of element 'A'.



Q.6 The reaction of sodium chloride solution with silver nitrate solution is shown in the following figure.



i) Name the products of the reaction.

ii) Does the reaction follow law of conservation of mass? Justify your answer.

Q.7 Study the following figure and answer the questions below.

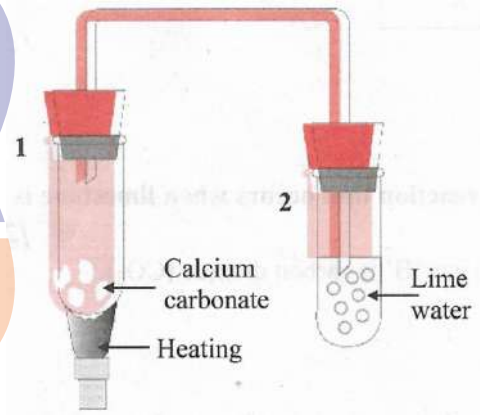
a) Give the chemical formulae of calcium carbonate and lime water.

b) Name the gas evolved when calcium carbonate is heated.

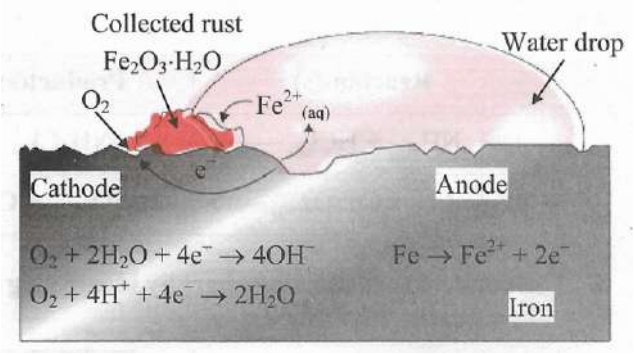
c) Name the solid product left behind in the first test tube.

d) What are the products formed in 2nd test tube?

e) Identify the type of chemical reaction occurring in the 1st test tube.



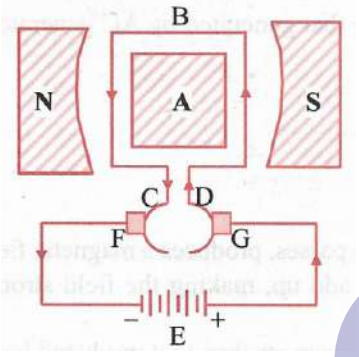
Q.8 Observe the following picture and write down the chemical reaction with explaination.



Q.9 Study the following figure and answer the questions below.

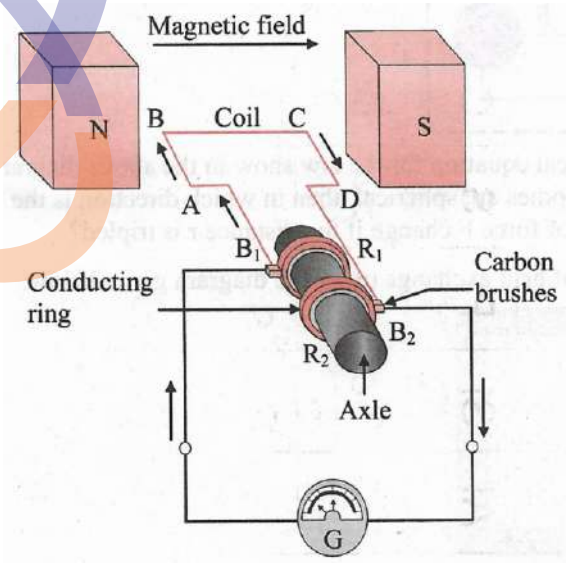
a) What will be the color of the compound that will remain in the evaporating dish after the reaction?
b) Name the type of chemical reaction that occurs.
c) Write balanced chemical equation for this reaction.

Q.10 For an electric motor as shown in the figure:



a) Label A, B, C, D, E, F and G.
b) What is the function of C and D?
c) State uses of F and G.

Q.11 Observe the following diagram and answer the questions.



a) Construction of which equipment does the above diagram shows?
b) On which principle does the above equipment work?
c) Explain the flow of current in external circuit, when the current in the loop is in direction A B C D.
d) Explain the flow of current in external circuit, when the current in the loop is in direction D C B A.
e) State the use of carbon brushes.

Q.12 Study the diagram of the lake in cold region after heavy ice fall given below and write the temperature observed at point X and point Y.