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.