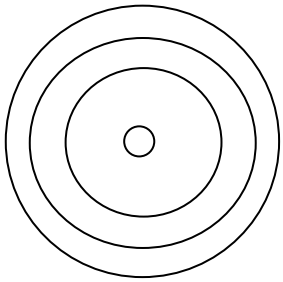
EURO Physics test n°2 2d12

NAME:

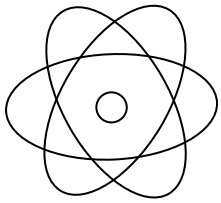
ATOMS

I) Models of atoms

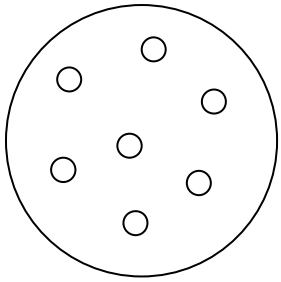
Here are three models of atoms:



(a)

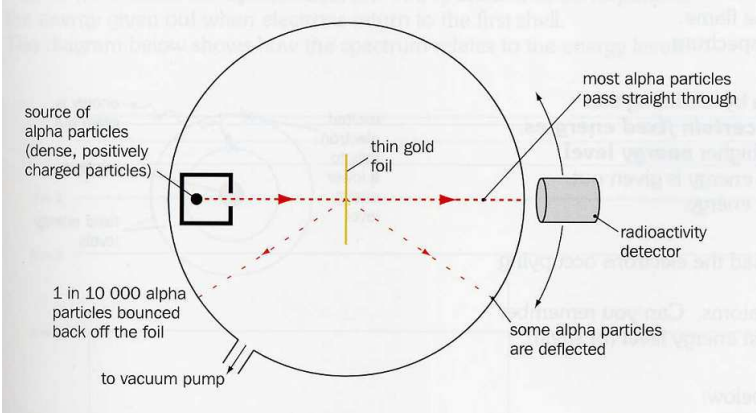


(b)



(c)

1. Associate each model to the right scientist: Bohr, Thomson, Rutherford — 3
2. Describe the model (c) in a few sentences. — 2
3. Here is Rutherford's experiment :

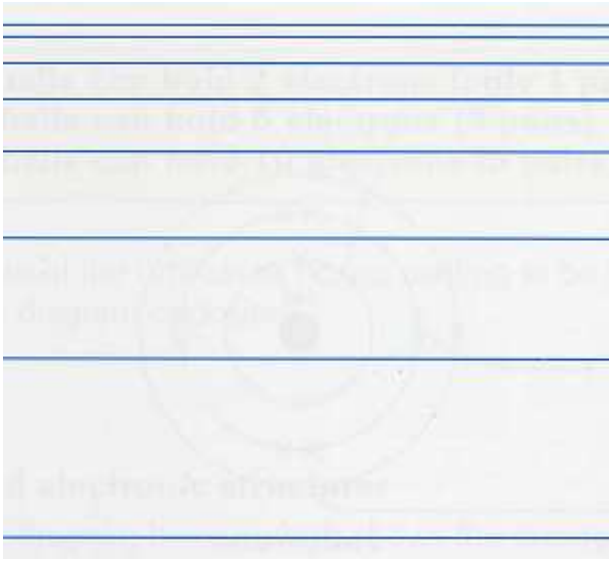


   a. What did Rutherford expect? — 1
   b. What were his observations? — 2
   c. Why did it prove the existence of a nucleus? — 1

4. An alpha particle is the nucleus of an helium atom: $^{4}_{2}He$. What is the composition of this nucleus? — 1

II) Electron shells and energy levels

1. What are the 2 ways of exciting an atom? — 2
2. What happens to its electrons then? — 1
3. What does a line in a line spectrum correspond to? — 2
4. Here is the diagram of energy levels in a hydrogen atom:



   a. Name the energy levels. — 1
   b. Draw a visible transition in blue. — 1
   c. Draw an invisible transition in black. — 1
   d. What makes the difference between the transition 3->2 and the transition 6->2? — 2