

New Text Question answers:

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1. The three subatomic particles are the Proton, Neutron, and Electron
2. Proton – +1 charge, found in the nucleus, 1836 times more massive than an electron
Electron – -1 charge, found in the outside/shell of the atom, much, much smaller than the proton, negligible mass.
3. BC place stadium is the atom – a pea at the 50 yard line is the nucleus. The electrons are flies in the stadium that are buzzing around erratically.
4. The nuclear force occurs when the protons are so close together that it overcomes the repulsive force. This explains how the protons with the same charge don't repel each other and fly apart.

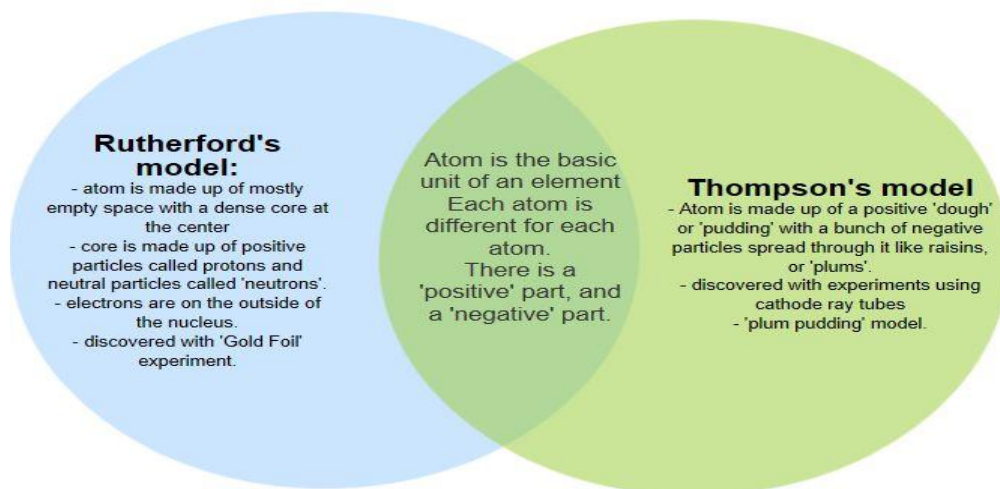
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1. Protons are made up of 3 smaller particles called 'Quarks' and 'Gluons' which hold the quarks together. It has 2 up quarks and 1 down quark.
2. Electron – Lepton found in atoms
Neutrinos – no charge, nearly massless, and difficult to detect. Trillions are constantly passing through our bodies each second.

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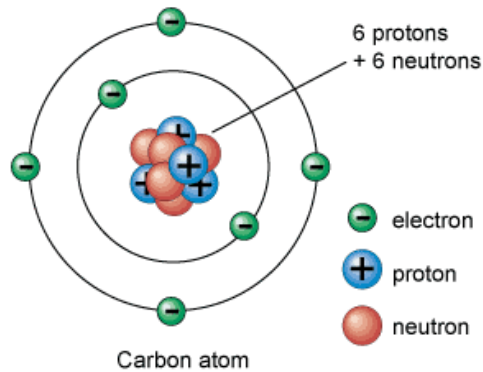
1. Many years passed before Democritus's ideas were accepted because Aristotle was a very well respected scholar, so people were slow to challenge him.
2. Law of conservation of mass – in a chemical reaction, mass is conserved – mass of reactants = mass of products. Dalton's model helps explain this because he said atoms could not be created or destroyed, they were only put together with other atoms in definite proportions.
3. a. Thompson discovered that the cathode rays could be diverted, so the beams must have a charge.
b. Dalton's model had to be changed because it meant that there was more to the atom – charged particles.
- 4.

Comparison between Thompson and Rutherford's models



5. To understand this question properly, check out this website...
<http://thelablads.blogspot.ca/2011/10/evidence-for-bohr-model.html>

6.



7. Protons - +1 charge, 2 up, 1 down quark, very slightly heavier than the neutrons.
Neutrons – no charge, 2 down and 1 up quark.
8. a. Elementary particle is one that can not be broken down or split up any further that makes up other particles.
b. Electrons are 'leptons' which are an elementary particle.
c. See question 7.
9. If Thompson's model was correct, there wouldn't have been any hard core to bounce back the positive particles that Rutherford shot at the gold foil, so all the particles would have gone through easily.
10. The neutron has no charge, so it would have no effect on magnetic or electric equipment that is used – not able to see the indirect evidence as easily as protons or electrons.
11. a. Neutrinos do not interact with other particles, so they travel without affecting other particles or being affected themselves. Detectors must be very large and sensitive to detect them.
b. Detectors are built deep underground to protect them from interference and other radiation.