The Atom

The atom defined:

The development of modern atomic theory began with the work of _____ in the 19th century. While his theory has since been revised, several points persist in modern atomic theory:

① All matter is _____.
② Atoms of a specific element are _____ from those of other _____.
③ Atoms cannot be _____.
④ Different atoms combine in simple whole-number _____ to form _____.
⑤ In a chemical reaction, atoms are _____ _____.

Atoms are _____ matter and can only be viewed with a _____ _____ _____ (STM). How small is an atom?
World population (2012) 7,000,000,000
Cu atoms in penny _____,000,000,000

❖ Cathode ray experiments (1890s) – detected _____ particles that are part of all matter
- _____ _____ determined charge-to-mass ratio of this particle and identified the _____.

❖ Oil Drop Experiment (1909) – _____ calculated the _____ of an electron and its _____, using the known charge-to-mass ratio.

❖ Gold Foil Experiment (1911) – _____ developed _____ atomic model. His results showed that an atom consists of:
- The _____: a tiny, dense, center region containing all of the atom's _____ charge and virtually all of its _____.
- The _____: mostly _____ through which electrons rapidly move while held within the atom by their _____.

❖ In 1920, Rutherford identified the positively charged particle in the nucleus called the _____.

❖ _____ identified the third subatomic particle, the _____, in 1932.

Subatomic Particles

The Electron

Symbol	
Charge	
Location	
Actual Mass (g)	
Relative Mass (amu)	
Discovered or identified by	

The Proton

Symbol	
Charge	
Location	
Actual Mass (g)	
Relative Mass (amu)	
Discovered or identified by	

The Neutron

Symbol	
Charge	
Location	
Actual Mass (g)	
Relative Mass (amu)	
Discovered or identified by	

Draw the atom as described by modern atomic theory.

In a well-developed paragraph, explain the atom as proposed by modern atomic theory.