

ASSIGNMENT

Base your answers to questions 33 through 35 on the information below.

In the modern model of the atom, each atom is composed of three major subatomic (or fundamental) particles.

33. Name the subatomic particles contained in the nucleus of the atom.
34. State the charge associated with *each* type of subatomic particle contained in the nucleus of the atom.
35. What is the net charge of the nucleus?
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36. John Dalton was an English scientist who proposed that atoms were hard, indivisible spheres. In the modern model, the atom has a different internal structure.
- a* Identify one experiment that led scientists to develop the modern model of the atom.
- b* Describe this experiment.
- c* State one conclusion about the internal structure of the atom, based on this experiment.
37. Which characteristics describe most nonmetals in the solid phase?
- (1) They are malleable and have metallic luster.
 - (2) They are malleable and lack metallic luster.
 - (3) They are brittle and have metallic luster.
 - (4) They are brittle and lack metallic luster.
38. Which element is a liquid at STP and has low electrical conductivity?
- | | |
|-------------|-------------|
| (1) silver | (3) barium |
| (2) mercury | (4) bromine |
39. In which area of the Periodic Table are the elements with the strongest nonmetallic properties located?
- | | |
|----------------|-----------------|
| (1) lower left | (3) lower right |
| (2) upper left | (4) upper right |
40. Properties of nonmetal atoms include
- (1) low ionization energy and low electronegativity
 - (2) low ionization energy and high electronegativity
 - (3) high ionization energy and low electronegativity
 - (4) high ionization energy and high electronegativity
41. Which element is *not* a metalloid?
- | | |
|-------------|-------------|
| (1) arsenic | (3) silicon |
| (2) boron | (4) sulfur |
42. Which element exhibits both metallic and nonmetallic properties?
- | | |
|--------|--------|
| (1) B | (3) K |
| (2) Ba | (4) Kr |
43. Which element is a metalloid?
- | | |
|--------|--------|
| (1) Mg | (3) Cr |
| (2) Si | (4) Ar |
44. The element arsenic (As) has the properties of
- (1) metals, only
 - (2) nonmetals, only
 - (3) both metals and nonmetals
 - (4) neither metals nor nonmetals
45. Which substance exists as a metallic solid at STP?
- | | |
|--------|----------------------|
| (1) Ar | (3) SiO ₂ |
| (2) Au | (4) CO ₂ |
46. Which element is a liquid at room temperature?
- | | |
|--------------------|--------|
| (1) K | (3) Hg |
| (2) I ₂ | (4) Mg |
47. A nonmetal which exists in the liquid state at room temperature is
- | | |
|--------------|--------------|
| (1) aluminum | (3) hydrogen |
| (2) mercury | (4) bromine |
48. Which sequence of atomic numbers represents elements which have similar chemical properties?
- | | |
|--------------------|-------------------|
| (1) 19, 23, 30, 36 | (3) 3, 12, 21, 40 |
| (2) 9, 16, 33, 50 | (4) 4, 20, 38, 88 |
49. Which three groups of the Periodic Table contain the most elements classified as metalloids (semimetals)?
- | | |
|-------------------|--------------------|
| (1) 1, 2, and 13 | (3) 14, 15, and 16 |
| (2) 2, 13, and 14 | (4) 16, 17, and 18 |
50. Bromine has chemical properties most similar to
- | | |
|---------------|-------------|
| (1) fluorine | (3) krypton |
| (2) potassium | (4) mercury |
51. All of the atoms of the elements in Period 2 have the same number of
- (1) protons
 - (2) neutrons
 - (3) valence electrons
 - (4) occupied energy levels (shells)