

Final Exam – Answer Key

1) a) A compound is a combination of two or more elements in fixed ratios, example H_2O , and can be broken down into simpler substances (elements) by means of a chemical change. A element can not be broken down into simpler substances by means of a chemical (or physical) change, and example would be hydrogen, H_2 .

b) A compound is a pure substance, it can not be broken down into simpler substances by means of a physical change, example H_2O , while a mixture is a combination of two or more pure substances that can be separated by means of a physical change, example salt in water.

2) Bottle 1 – homogeneous, pure, element
Bottle 2 – homogeneous, pure, element
Bottle 3 – heterogeneous, mixture
Bottle 4 – homogeneous, pure, compound
Bottle 5 – homogeneous, pure, compound
Bottle 6 – homogeneous, mixture, solution

3) a) neither b) ^2H

4) ^{60}Ni 5) ^{218}Po

6) a) false, they are not isotopes, they are isobars

b) false, atomic nuclei are made up of positive protons and neutral neutrons

c) false, the energy for generating electricity in nuclear power plants is a controlled nuclear fission reaction.

d) true

7) a) 100%, 50%, 25%, 12.5%, 6.25%

b) age of bone is about 11460 years, not likely a dinosaur bone – not old enough

8) a – 5, b – 7, c – 3, d – 2, e – 8, f – 1, g – 6, h – 4

9) a 10) b 11) a

12) a) 2, 6, 1, 3 b) 2, 1, 2

13) $\text{C}_5\text{H}_{12} + 8\text{O}_2 \rightarrow 5\text{CO}_2 + 6\text{H}_2\text{O}$

14) a 15) c 16) i - d ii - d

17) a) molarity b) ppm c) ppb (or ppt)

18) a 19) e

20) no the tank is not empty, the pressure inside is the same as the pressure outside.

21) b 22) c 23) a 24) c

25) a) pressure will build up inside the can pushing against the lid from the inside
b) the same trick will not work, screwtops have threads, increased pressure from the inside may even make the top harder to remove.

26) d 27) a – 4, b – 3, c – 1, d – 2 28) a

30) 2,3,4-trimethylhexane 2-butanone cyclopentanol
3,4-dimethyl-2-pentene 3,5-diethylheptanal

31) d 32) e (or b)

33) greenhouse gases, primarily CO₂

34) reduction of greenhouse gases will help prevent global warming, beneficial for the world but current technology is not at the level to do this economically, could result in job losses and other economic declines.

35) c 36) d 37) b 38) c 39) a

40) a 41) c 42) e 43) e 44) b