Chem25, Spring 2008, Foothill College, LecTest1
Name_____

Please read all the questions VERY carefully before answering. No outside paper is allowed.
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Who discovered the atomic theory? 1) _____
A) Nivaldo Tro
B) John Dalton and Antoine Lavoisier
C) John Dalton
D) Antoine Lavoisier
E) none of the above

2) The correct scientific notation for the number 0.00050210 is: 2) _____
A) 5.021×10^4
B) 5.0210×10^4
C) 5.021×10^{-4}
D) 5.0210×10^{-4}
E) none of the above

3) The correct decimal representation of 1.201×10^{-7} is: 3) _____
A) 12010000
B) 0.0000001201
C) 0.0001201
D) 1201.000
E) none of the above

4) In the number 48.93, which digit is estimated? 4) _____
A) 8
B) 9
C) 4
D) 3
E) None of the above, all digits are certain.

5) The correct number of significant figures in the number 865,000 is: 5) _____
A) 6
B) 4
C) 3
D) ambiguous
E) none of the above

6) The correct number of significant figures in the number 1.250100 is: 6) _____
A) 5
B) 4
C) 7
D) ambiguous
E) none of the above

7) The correct number of significant figures in the number 0.002320 is: 7) _____

A) 7
B) 3
C) 4
D) ambiguous
E) none of the above

8) Determine the answer for the equation below with correct number of significant figures: 8) _____

$3.215 \times 13.2 \div 0.218 =$ _____

A) 194.7
B) 195
C) 194.67
D) 194.669
E) none of the above

9) Determine the answer to the following equation with correct number of significant figures: 9) _____

$13.96 - 4.9102 + 71.5 =$ _____

A) 80.5498
B) 81
C) 80.55
D) 80.5
E) none of the above

10) Determine the answer to the following equation with correct number of significant figures: 10) _____

$(17.103 + 2.03) \times 1.02521 =$ _____

A) 19.6
B) 20
C) 19.62
D) 19.6153
E) none of the above

11) The correct prefix for the multiplier 1,000,000,000 is: 11) _____

A) milli.
B) giga.
C) mega.
D) tera.
E) none of the above

12) What is the standard SI unit for mass? 12) _____

A) ton
B) pound
C) gram
D) kilogram
E) none of the above

13) The standard SI unit for temperature is: 13) _____

A) atmospheres.
B) Fahrenheit.
C) Kelvin.
D) Celsius.
E) none of the above.

14) How many inches are in 25.8 cm? 14) _____

A) 10.2
B) 28.3
C) 0.0984
D) 0.10
E) none of the above

15) How many milliliters are in 17.5 L? 15) _____

A) 1.75×10^{-2}
B) 1.75×10^{3}
C) 1.75×10^{4}
D) 175
E) none of the above

16) How many cm^3 are there in 2.5 m^3? 16) _____

A) 2.5×10^{-6}
B) 2.5×10^{-2}
C) 2.5×10^{6}
D) 2.5×10^{2}
E) none of the above

17) How many cm^3 are there in 1.25 ft^3? 17) _____

A) 38.1
B) 3.54×10^{4}
C) 5.49×10^{3}
D) 246
E) none of the above

18) A plastic block has dimensions of 2.2 cm x 3.0 cm x 1.5 cm and a mass of 12.4 grams. Will the block float in water and why? 18) _____

A) Yes, because the density of the block is 0.80 g/mL which is less than the density of water.
B) No, because the density of the block is 1.3 g/mL which is greater than the density of water.
C) No, because the density of the block is 0.80 g/mL which is greater than the density of water.
D) Yes, because the density of the block is 1.3 g/mL which is less than the density of water.
E) none of the above

19) What is the density (g/mL) of an object that has a mass of 14.01 grams and, when placed into a graduated cylinder, causes the water level to rise from 25.2 mL to 33.6 mL? 19) _____

A) 1.7
B) 0.60
C) 2.4
D) 1.8
E) none of the above

20) The distance from New York City to Washington, DC is approximately 235 miles. Identify the correct solution map to convert from miles to kilometers using the prefix multipliers and the given conversion factors: 1 mile = 5280 ft; 1 ft = 12 in; 1 in = 2.54 cm. 20) _____

A) $235 \text{ mile} \times \frac{5280 \text{ ft}}{1 \text{ mile}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \times \frac{10^{-2} \text{ m}}{1 \text{ cm}} \times \frac{1 \text{ km}}{10^{3} \text{ m}}$

B) $235 \text{ mile} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{1 \text{ in}}{2.54 \text{ cm}} \times \frac{10^{-2} \text{ cm}}{1 \text{ m}} \times \frac{1 \text{ km}}{10^{3} \text{ m}}$

C) $235 \text{ mile} \times \frac{5280 \text{ ft}}{1 \text{ mile}} \times \frac{1 \text{ ft}}{12 \text{ in}} \times \frac{2.54 \text{ in}}{1 \text{ ft}} \times \frac{1 \text{ m}}{10^{-2} \text{ cm}} \times \frac{10^{3} \text{ km}}{1 \text{ m}}$

D) $235 \text{ mile} \times \frac{1 \text{ ft}}{5280 \text{ mile}} \times \frac{12 \text{ in}}{1 \text{ ft}} \times \frac{1 \text{ in}}{2.54 \text{ cm}} \times \frac{10^{-2} \text{ cm}}{1 \text{ m}} \times \frac{1 \text{ km}}{10^{3} \text{ m}}$

E) $235 \text{ mile} \times \frac{1\,2 \text{ in}}{1 \text{ ft}} \times \frac{2.54 \text{ cm}}{1 \text{ in}} \times \frac{1 \text{ m}}{10^{-2} \text{ cm}} \times \frac{10^{3} \text{ km}}{1 \text{ m}}$

21) Which state of matter has indefinite shape and is compressible? 21) _____

A) plasma
B) liquid
C) solid
D) gas
E) none of the above

22) Which among the following statements is false? 22) _____

A) A liquid has a definite volume; but it has no definite shape.
B) Both solids and liquids are incompressible while gases are compressible.
C) A gas has neither definite volume nor definite shape.
D) A solid has a definite shape and a definite volume.
E) none of the above

23) Which of the following items is a pure substance? 23) _____

A) seawater
B) brass
C) air
D) ice
E) none of the above

24) Which of the following is a heterogenous mixture? 24) _____

A) sugar water
B) air
C) milk
D) raisin bran
E) none of the above

25) Which of the following statements is FALSE? 25) _____

A) Mixtures may be composed of two or more elements, two or more compounds, or a combination of both.
B) A pure substance may either be an element or a compound.
C) A mixture may be either homogeneous or heterogeneous.
D) Matter may be a pure substance or it may be a mixture.
E) All of the above statements are true.

26) A solution is an example of a (an) 26) _____

A) heterogeneous mixture
B) compound
C) homogeneous mixture
D) element
E) pure substance

27) When methane is burned with oxygen the products are carbon dioxide and water. If you produce 36 grams of water and 44 grams of carbon dioxide from 16 grams of methane, how many grams of oxygen were needed for the reaction? 27) _____

A) 96
B) 80
C) 32
D) 64
E) none of the above

28) Which type of energy is associated with motion? 28) _____

A) kinetic
B) chemical
C) electrical
D) potential
E) none of the above

29) How many calories are there in a 255 Calorie snack bar? 29) _____

A) 1.07×10^3
B) 2.55×10^5
C) 1×10^3
D) 60.9
E) none of the above

30) The boiling point of water is 30) _____

(1) 212°F (2) 0°C (3) 373 K

A) 2 and 3 only
B) 1 and 3 only
C) 1 and 2 only
D) all of 1, 2, and 3
E) none of 1, 2, and 3

31) What is the value of 27°C on the Fahrenheit temperature scale? 31) _____

A) 300
B) 81
C) 106
D) -6.8
E) none of the above

32) What is the specific heat (J/g°C) of a metal object whose temperature increases by 3.0°C when 17.5 g of metal was heated with 38.5 J? 32) _____

A) 0.15
B) 4.18
C) 0.73
D) 1.4
E) none of the above

TRUE/FALSE. Choose "A" for a true answer and "B" for wrong answer.

33) The decimal number 0.0000010 expressed in scientific notation is 1.0×10^6. 33) _____

34) Exact numbers have an unlimited number of significant figures. 34) _____

35) When the number 65.59 is rounded to contain 2 significant figures, it becomes 66.0. 35) _____

36) Liquids have definite volume and indefinite shape. 36) _____

Answer Key
Testname: FH_CHEM25_SP08_LECTEST1

1) C
2) D
3) B
4) D
5) D
6) C
7) C
8) B
9) D
10) C
11) B
12) D
13) C
14) A
15) C
16) C
17) B
18) B
19) A
20) A
21) D
22) E
23) D
24) D
25) E
26) C
27) D
28) A
29) B
30) B
31) B
32) C
33) FALSE
34) TRUE
35) FALSE
36) TRUE