

# Exam 1A

## Chem 1121

### Fall 2018

Name: KEY

Show all work to receive credit.



**Multiple Choice. [4 pts. each.] Select the *best* answer on the scantron sheet.**

- Q1. The horizontal rows on the periodic table are called:  
a) core                      b) groups                      **c) periods**                      d) isotopes  
e) valence
- Q2. Which of the following is a *chemical property*?  
**a) flammability**                      b) mass                      c) temperature                      d) concentration  
e) pressure
- Q3. What is the name given to the change of state: solid  $\longrightarrow$  gas?  
a) deposition                      b) condensation                      **c) sublimation**                      d) fusion  
e) vaporization
- Q4. The element symbol for silver is:  
a) Si                      b) Au                      c) S                      d) Na  
**e) Ag**
- Q5. Which element has the symbol, Ca?  
**a) calcium**                      b) carbon                      c) chlorine                      d) cobalt  
e) lead
- Q6. How many atoms are contained in a molecule with the formula:  $C_3H_6NO_2$ ?  
a) 4                      b) 11                      **c) 12**                      d) 13  
e) 36
- Q7. Which of the following is NOT a property of metals?  
a) shiny                      **b) brittle**                      c) ductile                      d) good conductors  
e) malleable
- Q8. The SI prefix meaning  $\times 10^3$  is:  
a) M                      b) G                      c) d                      d) m  
**e) k**
- Q9. The SI prefix meaning  $\times 10^9$  is:  
a) M                      **b) G**                      c) d                      d) m  
e) k
- Q10. 250. mL is equal to how many liters?  
a) 2.50 L                      **b) 0.250 L**                      c) 0.0250 L                      d)  $2.50 \times 10^{-3}$  L  
e)  $2.50 \times 10^{-6}$  L

- Q11. How many significant figures are in the following measurement: 0.0100 kg?  
 a) 1                      b) 2                      **c) 3**                      d) 4  
 e) 5
- Q12. How many significant figures are in the following measurement:  $3.0 \times 10^4$  m?  
 a) 1                      **b) 2**                      c) 3                      d) 4  
 e) 5
- Q13. 32052 mL rounded to 3 significant figures is:  
 a) 320 mL                      b) 321 mL                      c) 32000 mL                      d)  $3.20 \times 10^4$  mL  
**e)  $3.21 \times 10^4$  mL**
- Q14. How many neutrons are in an atom of oxygen-17?  
 a) 0                      b) 8                      **c) 9**                      d) 17  
 e) 18

**Short Response. Show your work (where appropriate) to receive full credit!**

Q15. [10 pt.] Fill in the blanks: (You must spell the name correctly for full credit.)

Element Name	Element Symbol
aluminum	Al
barium	Ba
cobalt	Co
copper	Cu
radon	Rn
phosphorus	P
tin	Sn
iron	Fe
titanium	Ti
nickel	Ni



Q16. [10 pt.] Element "X" consists of two isotopes: X-30 (with a mass of 30.00 u and a relative abundance of 15.0 %) and X-33 (with a mass of 33.00 u and a relative abundance of 85.0 %). Calculate its average atomic mass. **Show your work.**

$$\begin{aligned} \text{(average)} \\ \text{atomic mass} &= \frac{15.0}{100} \times 30.00 \text{ u} + \frac{85.0}{100} \times 33.00 \text{ u} \\ &= 32.6 \text{ u} \end{aligned}$$

Q17. [10 pt.] The speed limit in Canada is 100. km/h. How many feet per second is this? Be sure to use the conversion-factor method, and show all work! *Hint: 1.000 km = 3281 ft.*

$$\frac{100. \text{ km}}{\text{h}} \times \frac{1 \text{ h}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ s}} \times \frac{3281 \text{ ft}}{1.000 \text{ km}} = 91.1 \text{ ft/s} \quad (3 \text{ s.f.})$$

Q18. [6 pt.] What are the names given to the following groups of the periodic table:

- a) 2A alkaline-earth metals
- b) 7A halogens

Q19. [8 pt.] Write out the electron configurations of the following atoms:

- a) K 2-8-8-1
- b) F 2-7

**BONUS Question:**

Give an example of a semi-metal or metalloid: Si, Ge, ...

# Exam 1B

## Chem 1121

### Fall 2018

Name: KEY

Show all work to receive credit.



**Multiple Choice.** [4 pts. each.] Select the *best* answer on the scantron sheet.

- Q1. Which of the following is NOT a property of metals?  
a) shiny      **b) brittle**      c) ductile      d) good conductors  
e) malleable
- Q2. The SI prefix meaning  $\times 10^3$  is:  
a) M      b) G      c) d      d) m  
**e) k**
- Q3. The SI prefix meaning  $\times 10^9$  is:  
a) M      **b) G**      c) d      d) m  
e) k
- Q4. 250. mL is equal to how many liters?  
a) 2.50 L      **b) 0.250 L**      c) 0.0250 L      d)  $2.50 \times 10^{-3}$  L  
e)  $2.50 \times 10^{-6}$  L
- Q5. How many significant figures are in the following measurement: 0.0100 kg?  
a) 1      b) 2      **c) 3**      d) 4  
e) 5
- Q6. How many significant figures are in the following measurement:  $3.0 \times 10^4$  m?  
a) 1      **b) 2**      c) 3      d) 4  
e) 5
- Q7. 32052 mL rounded to 3 significant figures is:  
a) 320 mL      b) 321 mL      c) 32000 mL      d)  $3.20 \times 10^4$  mL  
**e)  $3.21 \times 10^4$  mL**
- Q8. The horizontal rows on the periodic table are called:  
a) core      b) groups      **c) periods**      d) isotopes  
e) valence
- Q9. Which of the following is a *chemical property*?  
**a) flammability**      b) mass      c) temperature      d) concentration  
e) pressure
- Q10. What is the name given to the change of state: solid  $\longrightarrow$  gas?  
a) deposition      b) condensation      **c) sublimation**      d) fusion  
e) vaporization

Q11. The element symbol for silver is:

- a) Si                      b) Au                      c) S                      d) Na  
e) Ag

Q12. Which element has the symbol, Ca?

- a) calcium                      b) carbon                      c) chlorine                      d) cobalt  
e) lead

Q13. How many atoms are contained in a molecule with the formula:  $C_3H_6NO_2$ ?

- a) 4                      b) 11                      c) 12                      d) 13  
e) 36

Q14. How many neutrons are in an atom of oxygen-17?

- a) 0                      b) 8                      c) 9                      d) 17  
e) 18

**Short Response. Show your work (where appropriate) to receive full credit!**

Q15. [10 pt.] The speed limit in Canada is 100. km/h. How many feet per second is this? Be sure to use the conversion-factor method, and show all work!      *Hint:* 1.000 km = 3281 ft.

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Q16. [6 pt.] What are the names given to the following groups of the periodic table:

a) 1A      alkali metals

b) 8A      noble (or inert) gases

Q17. [8 pt.] Write out the electron configurations of the following atoms:

a) N      2-5

b) Ca      2-8-8-2

Q18. [10 pt.] Fill in the blanks: (You must spell the name correctly for full credit.)

Element Name	Element Symbol
nickel	Ni
tin	Sn
iron	Fe
titanium	Ti
phosphorus	P
radon	Rn
copper	Cu
cobalt	Co
barium	Ba
aluminum	Al

Q19. [10 pt.] Element "X" consists of two isotopes: X-33 (with a mass of 33.0 u and a relative abundance of 35.0 %) and X-37 (with a mass of 37.00 u and a relative abundance of 65.0 %). Calculate its average atomic mass. **Show your work.**

$$\begin{aligned} \text{(average)} \\ \text{atomic mass} &= \frac{35.0}{100} \times 33.0u + \frac{65.0}{100} \times 37.0u \\ &= 35.6u \end{aligned}$$



**BONUS Question:**

Give an example of a transition-metal: Sc, Ti, V, Cr, ...