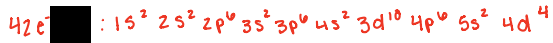
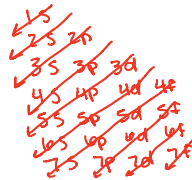
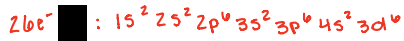


# Mock Exam 3

1.



2.

(b) angular momentum

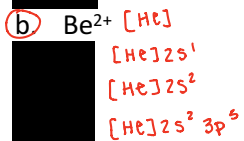
Subshell =  $l$  = angular momentum

3.

(b.) Kr > Br > Se > Ge > Ga

↑ ionization energy

4.



5.

density closest to nucleus  
 ↓  
 4d, 6s, 2s, 4f, 2p  
 ↑  
 highest energy subshell

6.

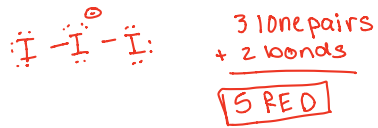
$T_{emp} = 36.2 + 273.15 = 309.35K$

$(1.39)V = (.0871)(.0821)(309.35)$

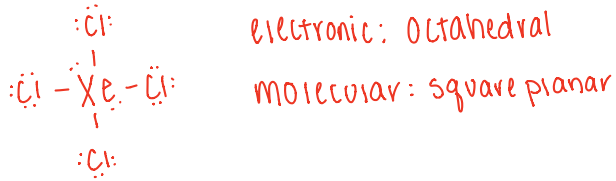
Pressure:  $\frac{141kPa \cdot 1atm}{101.325kPa} = 1.39atm$

$V = \frac{1.59L \cdot 1qt}{.95L} = 1.68qt$

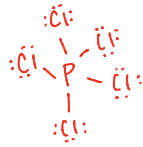
7.



8.



9.



trigonal bipyramidal

trigonal bipyramidal

no

10.

d.  $K > Ca > Ge > As > Kr$

atomic radius

11.

$$P_1 V_1 = P_2 V_2$$

$$\frac{832 \text{ torr} | \text{atm}}{760 \text{ torr}} = 1.09 \text{ atm}$$

$$(1.09)(2) = P(1)$$

$$P = \frac{2.18 \text{ atm} | 760 \text{ torr}}{1 \text{ atm}} = \boxed{1656.8 \text{ torr}}$$

12. [Redacted]

(c) II and III.

RED:  $\downarrow \nu = \downarrow E = \uparrow \lambda$   
 YELLOW:  $\uparrow \nu = \uparrow E = \downarrow \lambda$

13. [Redacted]

a) 14; 10; 6.

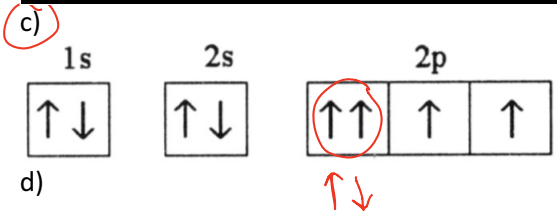
14. [Redacted]

a)  $N-F < C-F < B-F < H-F$ .

15. [Redacted]

a) [Redacted]

b) [Redacted]



The electrons are not spin paired

$\uparrow \downarrow$

e)

16.

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{(1)(6)}{400} = \frac{x(3)}{800}$$

$$x = 4$$

e.) Quadruples.

17.

b.) The volume of each gas would be 5.0 L and the pressure would be 1.0 atm.

All gases fill the volume of the container

$$\text{Pressure: } \frac{10 \text{ atm}}{10} = 1$$

18.

a.) The temperature reading is too high and could be due to a malfunctioning thermometer.

d.) An outside heating source may be present.

If you  $\frac{1}{2}$  the Pressure the temp should be  $\frac{1}{2}$  the original

19.

a.) 2.18 atm

$$\text{mol: } \frac{24.5 \text{ g}}{62.01 \text{ g}} = .3951 \text{ mol}$$

$$(P)(5) = (.3951)(.0821)(336.15)$$

$$\text{temp: } 63 + 273.15 = 336.15 \text{ K}$$

$$P = 2.18 \text{ atm}$$

Nitrate -  $\text{NO}_3^-$  - 62.01 g/mol

20. [Redacted]

a) s; f.

[Redacted]

S = ↓ E = most stable  
f = ↑ E = least stable

[Redacted]

21. [Redacted]

b) Nitrogen.  $1s^2 2s^2 2p^4$  ↑↓ ↑ ↑ 2

c) Arsenic.  $[Ar] 4s^2 3d^{10} 4p^3$  ↑ ↑ ↑ 3

[Redacted]  $[Ar] 4s^2 3d^8$  ↑↓ ↑↓ ↑↓ ↑ ↑ 2

22. [Redacted]

a.  $n = 2, l = 1, m_l = 0, m_s = +1/2$ .

[Redacted]

c.  $n = 2, l = 0, m_l = 0, m_s = +1/2$ .

[Redacted]

$n = 2$   
 $l = 1$   
 $m_l = -1, 0, 1$   
 $m_s = \pm 1/2$

[Redacted]

I.

23. Which orbitals could e

a. I only.

[Redacted]

24. [Redacted]

[Redacted]

$F > Cl > Br > I$

25.

a)

Not resonance-moved single bonds

b)

Not resonance-moved single bond

c)

26.

$$\frac{12.46 \text{ psi} | 1 \text{ atm}}{14.7 \text{ psi}} = \boxed{.848 \text{ atm}}$$

27.

$$\text{mol: } \frac{12.4g}{28g} = .443 \text{ mol} \quad (1.2)(V) = (.443)(.0821)(298.15)$$

$$\text{temp: } 25 + 273.15 = 298.15 \text{ K} \quad \boxed{V = 9.04 \text{ L}}$$

28.

$$456 = 20.1 + x$$

$$\boxed{x = 435.9}$$

29.

$$(1.6)(2.3) = n(.0821)(298.15)$$

$$n = .15 \text{ mol}$$

$$\text{molar mass: } \frac{1.38}{.15} = \boxed{9.2 \text{ g/mol}}$$

30.

$\delta^-$  : more electronegative  
 $\delta^+$  : less electronegative

d)  $\delta^-$ -Cl-P  $\delta^+$

