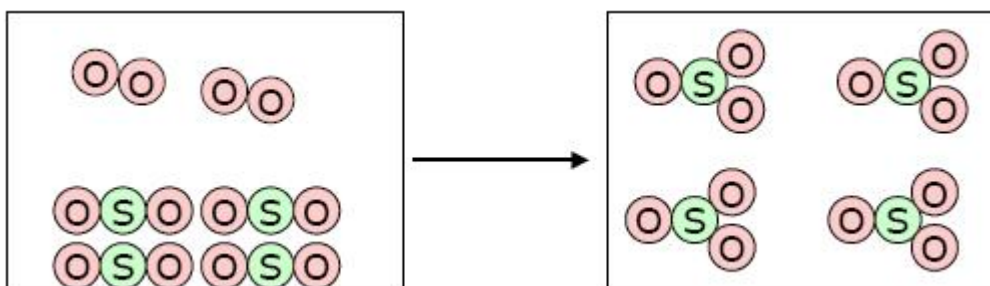
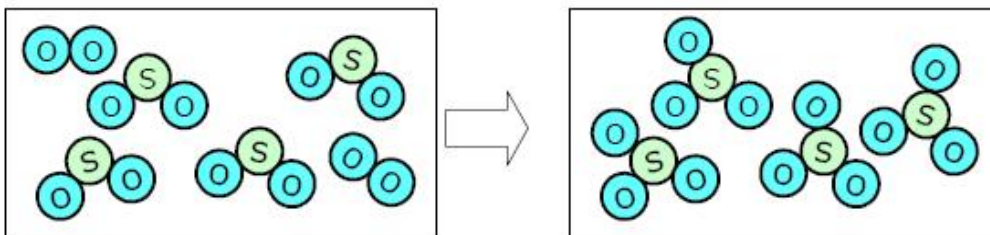


EXAM: Atomic Models & Periodic Table

Name:

Group:

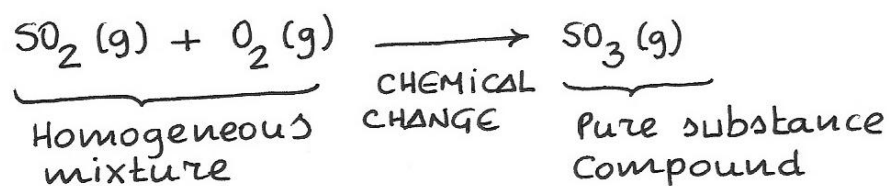
1 Classify the matter and the changes shown below



(Fixed shape)

①

Process #1



Process #2



2 Fill in the table							
Atom or ion	A	Z	# of			Electron Configuration	
			p <sup>+</sup>	n <sup>0</sup>	e <sup>-</sup>	Orbital diagram	Lewis
${}_{15}^{31}\text{A}$							
${}_{17}^{35}\text{B}$							
${}_{8}^{\square}\text{C}^{2-}$				10			
${}_{19}^{39}\text{D}^{\square}$					18		
${}_{17}^{37}\text{E}$							

Atom or ion	A	Z	# of			Electron Configuration		Lewis
			p <sup>+</sup>	n <sup>0</sup>	e <sup>-</sup>	Orbital diagram		
${}_{15}^{31}\text{A}$	31	15	15	16	15		$\cdot\ddot{\text{P}}\cdot$	
${}_{17}^{35}\text{B}$	35	17	17	18	17		$:\ddot{\text{Cl}}\cdot$	
${}_{8}^{18}\text{C}^{2-}$	18	8	8	10	10		$:\ddot{\text{O}}:^{2-}$	
${}_{19}^{39}\text{D}^{+}$	39	19	19	20	18		$\text{K}^{+}$	
${}_{17}^{37}\text{E}$	37	17	17	20	17		$:\ddot{\text{Cl}}\cdot$	

3 A hydrogen atom has its electron at ground state. That electron jumps to  $n=4$  and later returns to their ground state performing the jumps reflected in the spectrum below.

Look at the spectrum and determine:

- Which are the jumps from  $n=4$  to the ground state
- The jumps in which the electron takes energy
- The jumps in which the electron releases energy
- Draw all the jumps and the ionization energy in a energy diagram



③

a) The jumps:

$n=4 \rightarrow n=3$  (IR light)

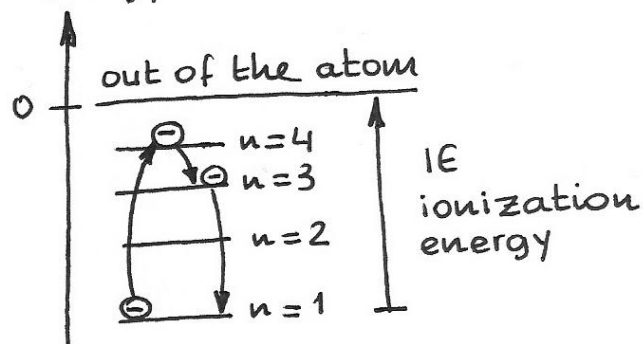
$n=3 \rightarrow n=1$  (UV light)

b) Takes energy in the jump  $n=1 \rightarrow n=4$

c) Releases energy in the jumps:

$n=4 \rightarrow n=3$  and  $n=3 \rightarrow n=1$

d) energy



- 4
1. the element with the highest metallic behavior
  2. indicate alkaline earth elements shown in this table
  3. the element with this electron configuration:  $1s^2 2s^2 2p^5$
  4. order the elements R, D, M, V, in the increasing order of electronegativity
  5. write the electron configuration of R using the orbital diagram (box diagram)
  6. indicate the ions that form the non-metallic elements
  7. show the elements in which the atom has only one unpaired electron
  8. indicate the halogens specified here
  9. order the elements N, J, T, Z in the increasing order of size
  10. show the element with  $Z^* = 7$
  11. show the elements with the lowest  $Z^*$
  12. indicate the metals
  13. indicate the cations that will be formed
  14. indicate the elements with three electrons unpaired
  15. indicate the elements with four electronic levels
  16. indicate the elements with one electron in their last electronic level
  17. the element with highest electronegativity and give the reasons
  18. indicate the elements with this electron configuration in their last level:  $s^2 p^1$
  19. place the following elements in their positions in the periodic table: X:  $1s^2 \dots 3s^2 3p^5$  Y:  $1s^2 2s^2 2p^4$
  20. fill in the table with the real symbols

Q	
	N
M	T

J		Z		D	
	R		V		L

- ④ 1) M 2) N, T 3) D 4)  $\begin{array}{cccc} | & | & | & | \\ \hline M & R & V & D \end{array}$  en increasing order
- 5)  $\begin{array}{ccccc} \boxed{\uparrow\downarrow} & \boxed{\uparrow\downarrow} & \boxed{\uparrow\downarrow\uparrow\downarrow} & \boxed{\uparrow\downarrow} & \boxed{\uparrow\uparrow} \\ 1s & 2s & 2p & 3s & 3p \end{array}$  6)  $\ddot{Q}^-$   $\ddot{Z}^{3-}$   $\ddot{V}^{2-}$   $\ddot{D}^-$
- 7) Q, M, J, D 8) D 9)  $\begin{array}{cccc} | & | & | & | \\ \hline Z & J & N & T \end{array}$  size increasing order 10) D
- 11) Q, M 12) M, N, T 13)  $H^+$ ,  $M^+$ ,  $N^{2+}$ ,  $T^{2+}$  14) Z 15) M, T
- 16) Q, M 17) D... en  $\uparrow$   $\begin{array}{c} Z^* \\ n \end{array}$  18) J 19)  $\begin{array}{|c|} \hline D \\ \hline X \\ \hline \end{array}$   $\begin{array}{|c|c|c|} \hline Z & Y & D \\ \hline \end{array}$