TOT 100
MARKS

TS Tuition Chem - Atomic Structure and Periodic Table Hwk #1 ANS

1. How many protons, electrons and neutrons are there in the following atoms? Complete the following table. Note that I have given you the element names only, so you have to search for the right element symbols.

Element	Protons (p⁺)	Electrons (e⁻)	Neutrons (n⁰)
Helium	2	2	2
Chlorine	17	17	18
Gallium	31	31	38
Cobalt	27	27	31
Phosphorus	15	15	15
Argon	18	18	21
Zirconium	40	40	51
Tungsten	74	74	109
Boron	5	5	5
Sodium	11	11	11
Tin	50	50	68
Mercury	80	80	120
Iron	26	26	29
Gold	79	79	117
Plutonium	94	94	150

[45]

2. Name all the *Alkali Metals* (i.e. Group I elements) and one common chemical property.

Lithium, Sodium, Potassium, Rubidium, Cesium, and Francium; Single electron in valence electron shell.

[7]

3. Name all the *Halogens* (i.e. Group VII elements) and one common chemical property.

Fluorine, Chlorine, Bromine, Iodine, and Astatine; Seven electrons in valence electron shell / Need one more electron to attain noble gas configuration.

[6]

4. Name all the *Noble Gases* (i.e. Group VIII elements) and one common chemical property.

Helium, Neon, Argon, Krypton, Xenon, and Radon; Full valence electron shells; Stable electronic configurations.

[7]

5. Draw the following atomic diagrams and write the electronic configurations (i.e. 2.8.8...):

a) Oxygen (O)

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(for all questions, 4 marks: 1 for p^+, 1 for n^0, 1 for e^- and 1 for e^- configurations)

2.6

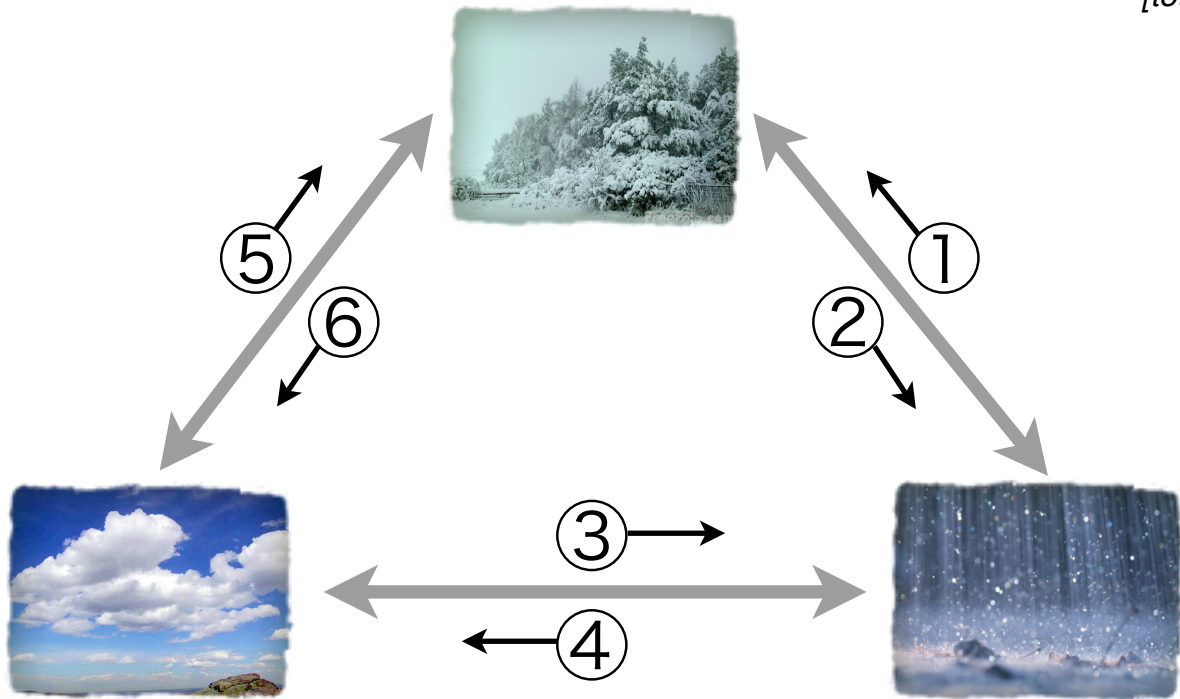b) Silicon (Si)

2.8.4

c) Potassium (K)

2.8.8.1

d) Bromine (Br)

2.8.8.7

e) Magnesium ion (Mg^{2+})

f) Sulphur ion (S^{2-})

6. Complete the states of matter cycle and give a real-life example of each occurring. Each is numbered, so write your answers below the diagram.

[tot 11]

Name of ①: *Freezing*

Use of ①:

Name of ②: *Melting*

Use of ②:

Name of ③: *Condensation*

Use of ③:

Name of ④: *Evaporation*

Use of ④:

Name of ⑤: *Deposition*

Use of ⑤: Snow forming in clouds (I couldn't give you an example of this in class!)

Name of ⑥: *Sublimation*

Use of ⑥: