

1. The following are the symbol of elements which can be found in the periodical table of the elements. What are the English names of these elements? (20%)
 - a. Li, Na K.
 - b. F, Cl, Br.
 - c. Sc, Ti, V, Cr.
2. What are the values and units of Avogadro constant, Plank constant, Boltzmann constant, atomic mass unit and charge of electron, respectively? (20%)
3. A sample of hydrogen gas has a volume of 8.56 L at a temperature of 0 ° C. Calculate the moles of H₂ in this sample. (using the ideal gas law for calculation) (20%)

4. Consider the reaction (20%)



Carried out at 25 ° C and 1 atm. Calculate ΔG° , using the following data:

Substance	$\Delta H_f^\circ(\text{kJ/mol})$	$S^\circ(\text{J/K mol})$
SO ₂ (g)	-297	248
SO ₃ (g)	-396	257
O ₂ (g)	0	205

5. How many structures of ethers, aldehydes and ketones that fit the chemical formula of C₅H₈O? (All possible structural isomers should be included in your answer). (20%)