CH1011 Tutorial 4

Name:

1. Draw a **Haworth projection** of an **aldose** sugar in it's hemiacetal β-form and indicate the **anomeric** carbon in this molecule.

2. Define the term **optical isomers**.
   In the two optical isomers shown which is the **R** and which the **S** form.

3. Provide **IUPAC names** for the following molecules:

4. A 50mL closed vessel contained 500mg of nitrogen gas at $0^{o}C$ and $8.13 \times 10^{5}Pa$. What mass of $CH_4(g)$ would occupy the same volume at the same temperature and pressure? (assume ideal gas behaviour)

5. A 0.34g sample of hydrogen gas (H_2) was added to the 50mL vessel containing the 500mg of N_2 and the vessel was resealed. Calculate the **mole-fraction** of N_2 that would be present in this system.

6. A 43 mg sample of rat hemoglobin is dissolved in water at $5^{o}C$ to make 3.00mL of solution. This solution is placed into an osmometer and the **osmotic pressure** measured and found to be 3.60 torr. What is the **molar mass** of this particular type of hemoglobin?
(R =0.0821 atm.L/mol.K; 1 atm = 760 torr)