CH1011

**Tutorial 4** 

## Name:

1. Determine if there are any **chiral centres** in the following molecules and assign **R** or **S** absolute configurations to the chiral centres you find.





2. Assign **E** or **Z** configurations to the following substituted alkenes.



- 3. Draw **skeletal formulae** for the following compounds:
  - (a) 3,4-diethyl-3-methyl-heptanal
  - (b) 3-isopropyl-2-methylhex-1-ene
- 4. Explain the relationship between **tertiary structure** and **function of a protein**.

5. A gas cylinder of  $0.0500 \text{ m}^3$  internal volume contained 2.600 kg of acetylene (C<sub>2</sub>H<sub>2</sub>). If the bursting disk in the cylinder was set to rupture at 100 atm. for safety reasons what is the maximum temperature (°C) that this cylinder may be used at? (assume ideal gas behaviour for acetylene).

6. Nitrobenzene freezes at 5.70°C and has a molal freezing point constant of 7.00 K kg solvent/mol solute. Calculate the **molecular weight** of an unknown substance form the observation that a solution of 2.05 g of unknown dissolved in 40.0 g nitrobenzene freezes at 1.10°C.

7. Explain what you understand by the terms "osmosis" and "osmotic pressure".