PART A

Consider the following molecules and answer the questions.

a) dichloromethane
b) 1-bromo-1-chloroethane
c) 2-bromopropane
d) 2-chlorobutane
e) cis-1,2-dichlorocyclopropane
f) trans-1,2-dichlorocyclopropane
g) trans-1-bromo-3-chlorocyclobutane
h) trans-1-bromo-2-chlorocyclobutane
i) cis-1-bromo-2-chloroethene
j) trans-1-bromo-2-chloroethene
k) (2S, 3R)-2,3-dibromobutane
l) (2R, 3R)-2,3-dibromobutane
m) meso-1,3-dimethylcyclohexane

1. Which of these molecules are chiral (i.e. asymmetric)?
2. Which of these molecules contain chiral carbons? In your drawings label them with an asterisk.
3. Which of these molecules can exist as enantiomeric pairs?
4. Which of these molecules represent meso compounds?

PART B

Indicate whether the following pairs of compounds represent the same molecule, pairs of enantiomers, diastereomers, meso compounds, or stereochemically unrelated molecules.

a)

b)