For up to 2 points (20% of 10 points, so it is not insignificant), reply to this email (be sure you reply only to me) with **your** answers to the following questions, **before** 5:30 P.M., Wednesday, September 7 (next lab, but for both Monday and Wednesday labs).

Do your own work on this, that is, do not just cut and paste from an internet/digital source or from the digital version of the manual.  Do not share or discuss with others, or blind copy your email to others.  This is for you to learn and benefit from, not to help someone else's grades.  We can do that during lab.

For full credit, your answers must be in the form of a complete sentence with correct grammar, spelling, and punctuation, except for #6 which you can just list.

I will email my answers to the group sometime between 5:31 and 6:00 P.M. on the due date, or present them during lab.

Al Quarles

1.       What is the best way to tell the difference between quartz and calcite? explain
The best way to tell the difference between quartz and calcite is to test for hardness, with quartz being harder than calcite and glass.  Testing with dilute hydrochloric acid can also be used, with calcite showing effervescence, but you need to have the acid with you.

2.       What is the best way to tell the difference between quartz and feldspar? explain
The best way to tell the difference between quartz and feldspar to look at the way the minerals break.  Quartz breaks with concoidal fracture, while feldspar breaks with two good plains of cleavage almost at right angles.

3.       What is the best way to tell the difference between muscovite and biotite? explain
The best way to tell the difference between muscovite and biotite is to look at the mineral color, with biotite being black and muscovite being silver.

4.       Describe mineral cleavage.
Mineral cleavage is how a mineral breaks along parallel planes of weakness, caused by the regular arrangement of atomic bonding of the mineral's elements.  Planes of weak atomic bonding can result in cleavage (relatively described as excellent, good, or poor).  Where the atomic bonding is equal in all directions (or nearly so), fracture will occur along the break surface.

5.       Why is color not an ideal property to use for identifying silicate minerals?
Color can be highly variable in silicate minerals due to variable chemical composition, and impurities.

6.       Name the eight major igneous rock-forming silicate minerals (hint, see the Bowen's Reaction Series).
quartz, potassium feldspar, muscovite, plagioclase, amphibole (hornblende), pyroxene (augite), and olivine