GLY 4310 Name _____
50 points Monday, April 5, 2010

LAB MIDTERM 2 KEY

Closed Notes - 15 points

True-False - Print the letter T or F in the blank to indicate if each of the following statements is true or false. Illegible answers are wrong. (1 point each)

1 F 1. The major felsic mineral in ijolite is quartz.

4 T 2. In rhyolite, the K-spars are often metastable high temperature forms such as sanidine or anorthoclase.

2 T 3. Aplite is a light colored hypabyssal rock.

2 T 4.Pyroxene is higher in Bowen's reaction series than hornblende.

7 F 5. Quartz is usually subhedral to euhedral in granite.

Multiple-Choice - Choose the best response to each statement or question. Print the letter corresponding to your choice in the blank. (1 point each)

7 D 1.Which mineral is most likely to be found in dunite?
A. Hematite
B. Magnetite
C. Pyrite
D. Chromite

4 D 2. What variety of quartz is likely to be seen in rhyolite?
A. Citrine
B. Milky
C. Rock crystal
D. Smoky

2 C 3. The essential felsic mineral in gabbro is:
A. Alkali feldspar
B. Quartz
C. Plagioclase
D. Nepheline

5 B 4. Which of the following minerals is not a clinopyroxene?

A. Aegirine
B. Hypersthene
C. Diopside
D. Augite

Fill-Ins - Answer each question. 1 point per blank.

7.5 1. Riebeckite is a sodium-rich variety of what mineral family? AMPHIBOLE

1 2. The name of this rock, suggested by Baron von Richtofen (grandfather of the WW I aviator), is from the Greek for stream or torrent, alluding to a lava flow. It is the extrusive equivalent of granite. The rock is RHYOLITE .

1 3. The major minerals of basalt are 3) PLAGIOCLASE and

3 4) PYROXENE .

Name one distinguishing characteristic of each of the following minerals in hand specimen. (More than one distinguishing characteristic may exist)

9 5. Augite CLEAVAGE IN 2-DIR @ 90°

2.5 6. Sodalite BLUE COLOR

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Open Notes - 35 points

You are allowed to use your own lab write-ups and all laboratory information sheets handed out in class. No other notes or books may be used. Each thin section and hand specimen is identified with a letter and a number. The number corresponds to the question number. The letter is used with the question to identify different samples. Peeling the letters off the slides or rocks will be considered to be cheating.

For each of the following specimens, identify the rock. Tell whether each rock is intrusive or extrusive. (½ point each blank)

		Rock name	Intrusive or Extrusive?
4.5	1.	Monzonite	1 Intrusive
7	2.	Trachyte Porphyry	3 Extrusive
5.5	3.	Norite	1 Intrusive
6	4.	Dunite	1 Intrusive
7	5.	Dacite	5 Extrusive
7.5	6.	Nepheline Syenite	0 Intrusive
0.5	7.	Muscovite-Biotite Granite	0 Intrusive
1	8.	Rhyolite	0 Extrusive
2	9.	Amygdaloidal Basalt	0 Extrusive
5	10.	Hornblende Gabbro	1 Intrusive

For each of the thin sections, identify three minerals and describe them as fully as possible; use both plane-polarized and crossed-nicols. Your description should include features which enable you to distinguish each mineral, or are pertinent to the description of the rock. (5 points per thin section)

	NUMBER	MINERAL	DESCRIPTION
1, 2.5	11.	_____	_____
			_____
			_____
		_____	_____
			_____
			_____
		_____	_____
			_____
			_____

	NUMBER	MINERAL	DESCRIPTION
6,4.5	12.		

Examine each hand specimen. Identify and describe the major minerals. Estimate the percentage of each identified mineral present in the rock. List the color index. Name the rock, as completely as possible. These specimens correspond to the thin sections of the same number seen in questions 11-12. (NOTE: You may have fewer minerals than the spaces provided.) (5 points per specimen)

	NUMBER	MINERAL AND %	DESCRIPTION
10,3	11.	Plagioclase 45%	Anhedral White to gray, some w twinning
			Up to 3 mm Lath to equant
		Quartz 25%	Rounded anhedra to 2 mm
			Gray
		Hornblende 15%	Suhedral black
			4 to 8 mm columnar
		Biotite 10%	Shiny black anhedra
			2-5 mm
		Augite to 5%	Green anhedra to 1.5 mm

4 COLOR INDEX: Mesotype

4 ROCK NAME: Tonalite (NARS 24)

	NUMBER	MINERAL AND %	DESCRIPTION
12.5,2	12.	Quartz 35-40%	Anhedra 1-5 mm
			Gray
		Plagioclase 20%	Anhedral to subhedral
			White 1-5 mm
		K-spar 30%	Anhedral 1-5 mm
		Muscovite < 5%	Anhedral 1-2 mm
			Shiny
		Biotite 5-10%	Anhedral, Black,
			1-3 mm

2 COLOR INDEX: Leucocratic

3.5 ROCK NAME: Biotite Granite (NARS 1)

Interference Figures - Obtain the interference of the grain indicted on each thin section. Estimate 2V if the class is biaxial. If the mineral is uniaxial, state whether the interference figure is centered or not (5 points total)

	Number	Optical Class	Optical Sign	2V
2	13	Biaxial	1 Positive	2.5 >50°
1	14	Uniaxial	5 Negative	NA

13 - Alkali Syenie NARS 14 - Sodic plagioclase

14 - Calcite Red #20