GLY 4310 Name _____
50 points March 26, 2019
10 students took exam

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)

2 T 1. Trachyte is closest to the "A" corner of the QAPF diagram.

0 T 2. Smoky quartz may be present in rhyolite due to radiation damage from the potassium in K-spar.

7 F 3. Magnetite is a frequent opaque accessory mineral in ultramafic rocks.

4 T 4. The plagioclase composition of gabbro is > An_{50}.

1 F 5. Major batholith complexes are composed of a homogeneous rock type throughout the entire complex.

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

5 C 1. Andesite is closest to which corner of the QAPF diagram?
A. A
B. Q
C. P
D. F

1 D 2. Tuffs may contain which of the following?
A. Broken mineral grains
B. Glass shards
C. Lithic fragments
D. Any of the above

1 D 3. Which of the following is a large plutonic complex?
A. Bushveld, South Africa
B. Muskox (Northwest Territories, Canada)
C. Stillwater Complex (Montana)
D. All of the above

3 D 4. Kimberlite pipes are enriched in which of the following elements?
A. Aluminum
B. Calcium
B. Phosphorus
D. Potassium

3.5 D 5. What mafic mineral is essential in ijolite?
A. Biotite
B. Hornblende
C. Olivine
D. Pyroxene

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

Two features which distinguish opx from cpx in thin section observations are:

3 1) OPX has low order interference colors, CPX generally 2° colors

6.5 2) OPX has parallel extinction, CPX has inclined extinction

5.5 3. Norite contains essential orthopyroxene. How may the orthopyroxene sometimes be recognized in hand specimen?

Opx may be recognized as a type of metallic luster, known as Schiller luster.

4 4. The presence of P in magma usually produces what mineral in granitic rocks? Apatite

7 5. How is chromitite different than most other ultramafic rocks?

It is denser

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LAB MIDTERM 2 KEY

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	1. Quartz Monzonite Porphyry	0 Intrusive
5.5	2. Hornblende Gabbro	0 Intrusive
2.5	3. Rhyolite Tuff	0 Extrusive
10	4. Phonolite	0 Extrusive
5	5. Olivine Basalt porphyry	2 Extrusive
7.5	6. Nepheline Sodalite Syenite	0 Intrusive
9	7. Trachyte porphyry	2 Extrusive
8.5	8. Granodiorite	0 Intrusive
6.5	9. Hornblende Andesite	5 Extrusive
7	10. Anorthosite	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) For specimens 11 and 12, you have both a thin section and a hand specimen.

THIN SECTION

NUMBER	MINERAL	DESCRIPTION
18.5 11.	_____	_____
		_____
		_____
	_____	_____
		_____
		_____
	_____	_____
		_____
		_____
	_____	_____
		_____
		_____
	_____	_____
		_____
		_____

THIN SECTION

	NUMBER	MINERAL	DESCRIPTION
18.5	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)

HAND SPECIMEN

	NUMBER	MINERAL AND %	DESCRIPTION
14.5	11.	K-spar 60-85%	Pink, anhedral, 1 mm
		Nepheline 10-15%	Anhedral, 1.5 mm, rounded
			Greasy luster
		Amphibole 5-20%	Black, anhedral to subhedral
			1-5 mm, elongated
		Plagioclase ≈ 2%	Subhedral, gray 1 mm laths
		Cancrinite	Small yellow xtals

1 COLOR INDEX: Leucocratic

8 ROCK NAME: Nepheline Syenite (NARS 17)

4.0 12. 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

2 COLOR INDEX: Mesotype

3 ROCK NAME: Tonalite (NARS 24)

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 (6 points total)

	Number	Optical Class	Optical Sign	2V
1	13	Uniaxial	1 -	2 Off-center
3	14	Biaxial	4 +	3 ~65°

Lab Midterm 2

Closed (15 points) _____

Open (35 points) _____

Total (50 Points) _____ % _____ Grade _____

Labs to Date

Labs 1-8 (160 points possible) _____

Lab Midterms (80 points possible) _____ _____% Grade _____

Total (240 points possible) _____ _____% Grade _____

Lab Midterm Results

Previous Years

Year	%
2019	65.6
2018	67.7
2017	77.4
2016	72.4
2015	65.8
2014	79.6
2013	64.6
2012	77.0
2011	71.8
2010	85.6
2008	63.3

Lab Grade to Date (240 possible)

Previous Years

Year	%
2019	87.6
2018	88.3
2017	90.5
2016	86.2
2015	84.8
2014	89.8
2013	85.8
2012	87.8
2011	87.9
2010	89.5
2008	86.3