

LAB FINAL EXAMINATION KEY
Open Notes

Determine if each of the following grains is isotropic or anisotropic. (2 points)

0 1. Isotropic

0 2. Anisotropic

Estimate the relief (in words and numerically) of each of the following grains. (8 points)

11 3. High $n \approx 1.75$

10 4. Low $n \approx 1.53$

Indicate what technique was used to determine the relief, explain how you used the technique, and show calculations.

3 Becke in

4 Becke out (hard to see)

Oblique illumination

Light blue toward shadow

Yellow away

Name the type of twinning seen in each crystal. (3 points)

0 5. Carlsbad

2 6. Gridiron

0.5 7. Albite

Name the feature seen in this crystal (zoning, ex-solution) (2 points)

0 8. Ex-solution

Describe the cleavage or fracture (2 points)

1.5 9. 2D @ 90°

Determine the interference color (color and order) of the grain under the cross-hair.
(6 points)

3 10. 3° green

5 11. 1° yellow-orange

Indicate what technique was used to determine the interference color, explain how you used the technique, and show calculations (if any were used).

10

11



Describe the pleochroism or absorption, if any, seen in the following grains. Indicate whether you are reporting pleochroism or absorption. List the color range associated with each grain(3 points)

2.5 12. Pleochroism - tan to green

6 13. Pleochroism - Inky-blue to brown

7 14. Absorption - Light to Medium green

Determine if each of the following grains shows parallel, inclined, symmetric, undulatory, or continuous extinction. Report the extinction angle, τ , if applicable (4 points)

	Type of Extinction	Extinction Angle, τ
7,8	15. <u>Inclined</u>	<u>$\tau \approx 8^\circ$</u>
9,3	16. <u>Symmetric</u>	<u>$\tau = 28^\circ$</u>

Determine the optical class, and sign if appropriate, of each of the following crystals. In the space below, sketch the inference figure you obtained, and describe how the sign was determined. If appropriate, estimate 2V in your description. (10 points)

	Optical Class	Sign	2V?
10	17. <u>Biaxial</u>	0 <u>Positive</u>	3 <u>25°</u>
7	18. <u>Uniaxial</u>	4 <u>Negative</u>	4 <u>N.A.</u>

18
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Final Lab Exam Results (50 possible)

<u>43.0</u>	B	
42.5		
41.5		
40.5		
<u>40.0 - 2</u>	B-	
<u>38.5 - 2</u>	C+	
38.0		MEDIAN = 38.0
37.5		
<u>37.0</u>	C	
<u>35.0</u>	C-	MEAN = 36.7 (73.4%, C)
<u>31.5</u>	D	
31.0		
30.5		
<u>30.0</u>	D-	
<u>29.0</u>	F	

Last year the high grade was **49.0**

Previous Years Results -Lab Final Examination

Term, Year	Mean, %
Fall, 2012	73.4
Fall, 2011	74.1
Fall, 2010	54.1
Fall, 2009	72.2
Spring, 2009	58.5
Fall, 2007	64.4
Fall, 2006	91.5
Fall, 2005	76.8
Spring, 2004	64.5
Fall, 2002	78.5

Prior to 2002, lab exams were given in a different format, and are not as comparable. All of these exams covered the same material, and were, as nearly as possible, of the same level of difficulty.

TOTAL LABORATORY SCORES (OUT OF 450)

<u>423.3</u>	A	
417.5		
<u>413.3</u>	A-	
401.7		
399.5		
<u>395.2</u>	B+	
389.1		
386.8		MEAN = 388.7 (86.4%)
384.5		MEDIAN = 384.5
384.4		
378.4		
377.6		
<u>375.4</u>	B	
368.8		
<u>363.1</u>	B-	
<u>333.3</u>	C	
<u>321.7</u>	C-	

Previous Years Results - Laboratory Scores

Term, Year	Mean, %
Fall, 2012	86.4
Fall, 2011	85.2
Fall, 2010	83.2
Fall, 2009	86.3
Spring, 2009	84.5
Fall, 2007	84.6
Fall, 2006	87.9
Fall, 2005	80.9
Spring, 2004	86.8
Fall, 2002	88.3

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