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Structural Geology midterm exam. October 17, 2007.

Part-I: Short-answer questions (20 points each). Answer 3 of the following 4 questions. If you answer all 4, I will grade the first 3. Answers should be 3–5 sentences in length with a well-labeled diagram or two as needed.

1) How does crenulation cleavage form?

2) Sketch the three main features you would expect to find on a joint face. What do each of these features tell you about the formation of the joint?

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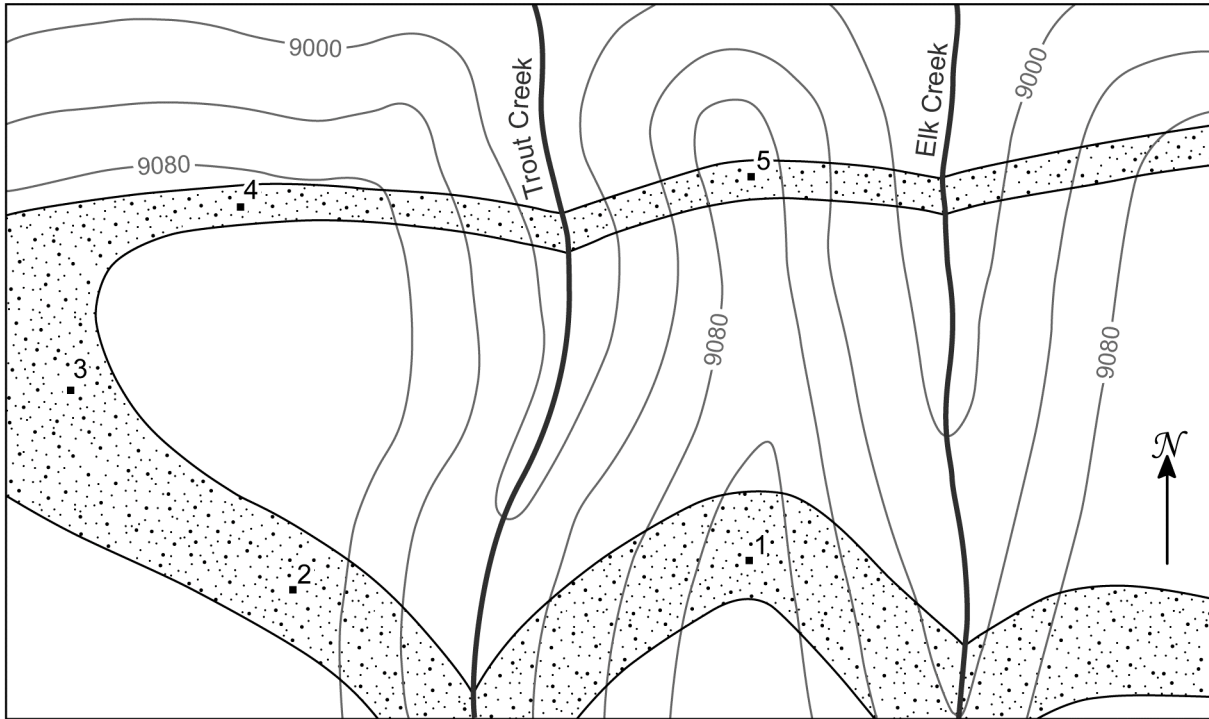
3) Name two structures that can be used to determine the relative “stiffness” (a.k.a. rheologic strength, resistance to flow, or viscosity) of different rock units and explain how each can give you this information.

4) Explain the difference between intersection lineations and elongation lineations. Provide an example of each.

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Part-II: Map and photo interpretation (20 points each).

5) Below is a simple geologic map of a distinctive sandstone bed (stippled). On the map draw an appropriate, correctly oriented symbol for the strike and dip of bedding at each of the numbered field stations. Do not worry about determining the exact dip angle. Provide a full description of this fold and draw its appropriate, correctly oriented symbol on the map.



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6) Assume that you are looking at the profile plane of this fold. The strike and dip of this plane is 322° , 65° -SW, and the top of the photo is up. Answer the following: A) What is the trend and plunge of the fold hinge? B) If this is a parasitic fold on the limb of a larger antiform, in what direction would you have to walk to find the hinge-zone of the larger fold? In one or two sentences, explain why this fold cannot have formed due to shear folding.

