

Note

The sample questions below were set up for a previous year in which a mid-term test was set for a 3-hour lab period. The current course has two short midterms instead of one long one. The material below, especially question 4, would be too long for the 1 hour 20 minute test in the current format of the course.. It does, however, illustrate the general types of problems you should be able to answer.

Note that the actual test will not be limited to the problems shown here. Problem-solving is an important part of EAS 233 and structural geology in general, so you need to be prepared for the unexpected!

Answer all the questions.

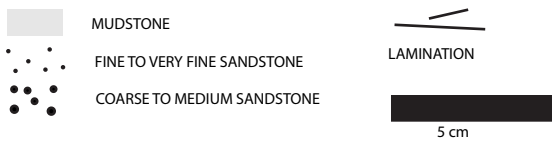
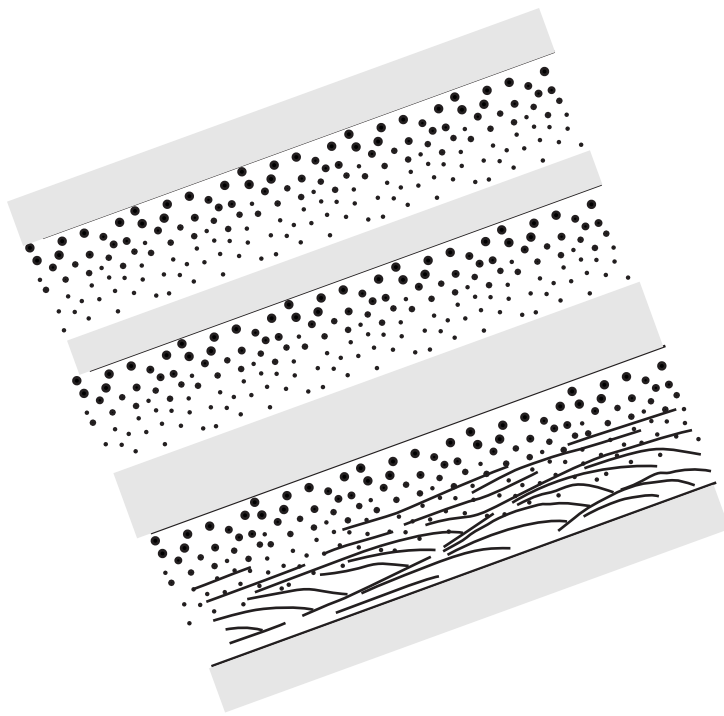
Take care to show the constructions and calculations you used to arrive at your answer.

Note that presentation and accuracy are important in the evaluation of your answers. Make sure that your answers show orientation, scale, and legend information to explain any symbols you use that are not in the original question.

Pass in this question paper along with your answer booklet and all your working materials when you are done.

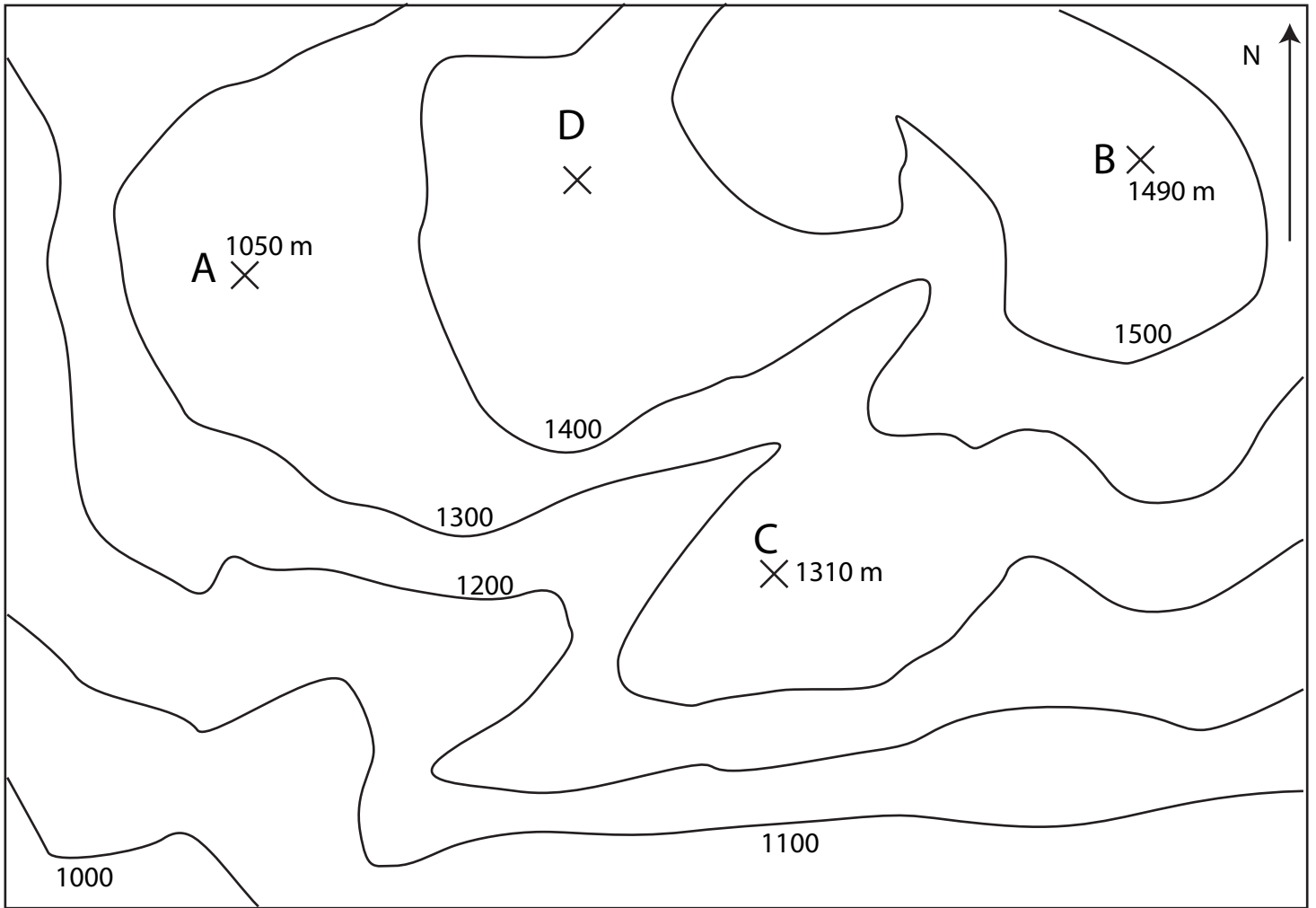
The sample for question 1 will be passed around the room during the test. You will have the sample for 10 minutes. Answer question 1 at the back of your answer booklet when the sample arrives at your desk.

1. **Do this question when the sample arrives at your desk.** The sample contains a fold. Determine the inter-limb angle, describe the tightness of the fold in words, and identify the style of folding (kink, chevron, buckle, etc.). (10 %)
2. The map of the Eaglenest oilfield shows the elevation of a fault at three locations. Assuming the unit is planar, determine the strike and dip of the fault and predict where it will outcrop. At what elevation would you expect the fault to be present in well D. (20 %)
3. A quarry has walls that are inclined N-S and E-W. The N-S wall is vertical but the E-W wall dips at 45° towards the south. The trace of bedding plunges 20 degrees S in the N-S wall, and 20° W in the E-W wall. Figure 1 is a diagram of sedimentary structures in the N-S wall. Determine the strike and dip of the bed.. Are the beds upright or upside-down; explain your reasons. (15 %)
4. Examine the map ‘Map 7’
 - a. The map contains a number of strike and dip measurements in the folded rocks of the Halifax Formation. Plot these on a suitable projection and determine the orientation of the mean fold axis. (15 %)
 - b. Draw a cross-section along the line C-D in the map 7. (30%)
 - c. Make a list of the events, for which you have evidence, in the geological history of the area, starting with the oldest. (10 %)



Sketch of quarry wall

Figure 1



Scale 1: 10,000 Contour interval 100 m
Map of the Eaglenest area

Well location with fault elevation X 1310 m

Blomidon Fm.

Wolfville Fm.

Cherrie Fm.

Horton Bluff Fm.

Horton Group

Halifax Fm.

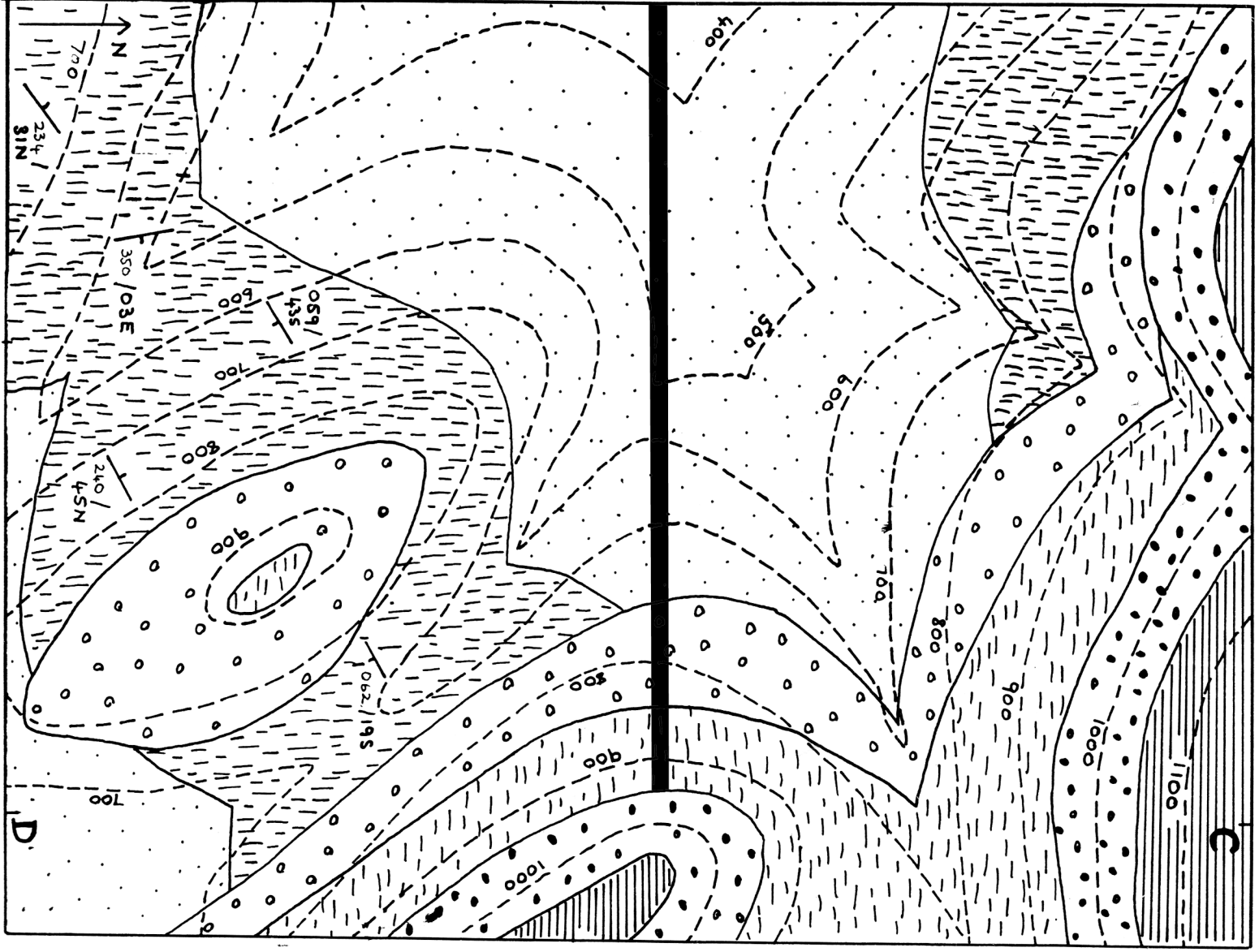
Goldenville Fm.

Meguma Group

Diabase

Scale 1:10,000

Strike & dip of bedding (upright)



MAP 7