

Shuttach
28/11/18

ES3101: Advanced Structural Geology
Final Exam
Full Marks: 50

Name
ID#

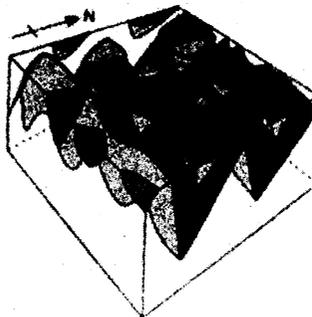
Read the questions carefully, and please provide short and succinct answers. Please provide sketches supporting your answers, wherever you feel they are necessary.

1. True or False. Please justify your answers with succinct arguments and / sketches. (15)
 - (a) Joints planes and shear fractures are not distinguishable from each other.
 - (b) Hanging wall and footwall imbrications can not be distinguished from each other.
 - (c) Pressure solution preserves original grain boundaries.
 - (d) Plunge of striping lineation is a sufficient condition for recognizing the type of a fold.
 - (e) Faults on both sides of a turtle back structure have different slip directions.

2. How can a critical wedge become subcritical? What kinds of structures would you expect to see in a subcritical wedge? How do you explain existence of normal faults in fold thrust belts? (3+2+2)

3. Please make a sketch of feather joints that might form along a normal fault. Explain the mechanism of such structures. (2+2)

4. Identify the type of fold interference pattern in the following figure. How does it form? What is the angle between the orientations of the two hinge planes? In the absence of the preserved hinges, how can you recognize such structures? (1+3+1+2)



5. The following thin-section shows mica-fish structures. Please mark the following.
 (a) Mica-fish, (b) sense of shear (c) C-foliation (d) s-foliation.
 How does mica-fish form? (4+2)



6. What is a tear fault? Why does it form? (2+3)

7. Study the following schematic sketches of two different shear zone evolutionary paths. Make a plot of active thickness vs time for these shear zones. What are these two types of shear zones commonly called? What are the underlying mechanisms that result in such types of shear zones? (Hint: think along stress-strain curves) (3+1+2)

