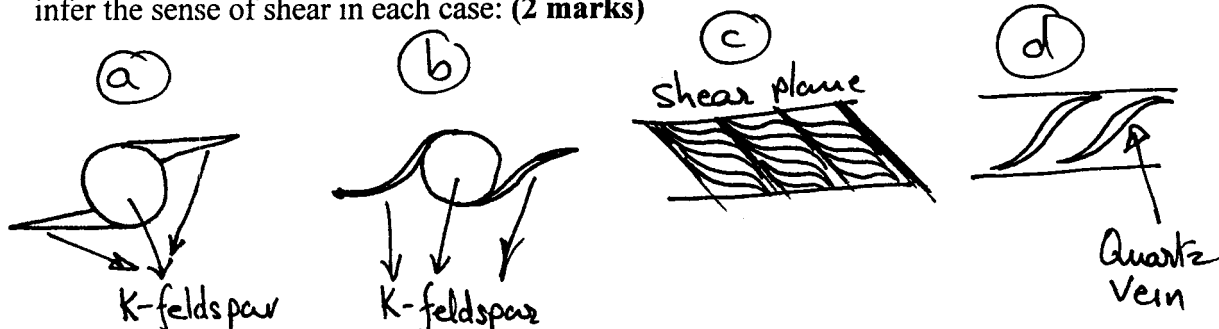


INDIAN INSTITUTE OF TECHNOLOGY

Date: _____ FN/AN Time 2/3 hrs. Full Marks 60 No. of Students 10
Autumn/Spring Semester, 2002/04 Deptt. Geology & Geophy. Sub. No. GG43002
Ist Yr. B.Tech. (H)/B.Arch. (H)/M.Sc. Sub. Name Deformation In Rocks.
parallel M.Sc.

Instructions: Answer all the questions. Draw neat *sketches* wherever necessary. Marks are mentioned at the end of each question.

1. Define (a) Extra half plane in dislocations (b) Kinematic vorticity number (W_k) (c) Spin (d) Duplex (2 marks)
2. The following microstructures were observed in a shear zone. Identify them and infer the sense of shear in each case: (2 marks)



3. What is the difference between Nabarro-Herring Creep and Coble Creep? Which one of these is expected during the initial stages of development of a differentiated crenulation cleavage (5 marks).
4. Explain the Mohr Stress diagram for pre-fractured rocks (5 marks).
5. For stress acting on a cube (in 3-Dimension), there should be 9 independent components in the stress matrix. Why are these reduced to six independent components for stress at a point? (5 marks).
6. Briefly describe the different types of cross-sections and explain what is a balanced cross-section (5 marks).
7. What is strain insensitive fabric? Explain how it develops (6 marks).
8. Explain the different models that help understand the relationship between strain and the degree of anisotropy determined from AMS studies (10 marks).
9. Using Biot-Ramberg's equation, explain in detail the relationship between viscosity ratio and folding of single competent layer embedded in a relatively incompetent matrix (10 marks).
10. With neat sketches, explain the development of different fold interference patterns during superposed folding (10 marks).