

Assignment 1

(Due: 23 January, 2020 by 17:00)

- Q1.** Define the terms **intact rock**, **discontinuities** and **rock mass**. **Discuss the effect of discontinuities** on the behaviour of the rock masses, including the following points in your discussion: structure, stresses and strains, strength and deformation behavior, groundwater effects, relative importance of laboratory and *in-situ* testing.
- Q2.** **Silica and feldspars** are the two most abundant mineral groups in the continental crust. Explain the **similarities and differences** between them and **give and characterize a mineral example of each group**.
- Q3.** If a **sedimentary rock** is made up of particles derived from the weathering and erosion of igneous rocks, how can we tell that the rock is sedimentary rather than igneous?
- Q4.** Explain what are **faults** and how they are formed.
- Name and label the **main elements of a fault** with the help of a neat **sketch**.
 - Describe and sketch** the main fault types. For **each type**, explain what were the dominant forces during faulting (tensional, compressional, or shear) and what was the **relative motion** of the footwall and the hanging wall blocks.

Q5. Identify and describe the geological feature(s) (A to H) and the type of strata (sedimentary, igneous, metamorphic) in each of the photos below.

Photo 1

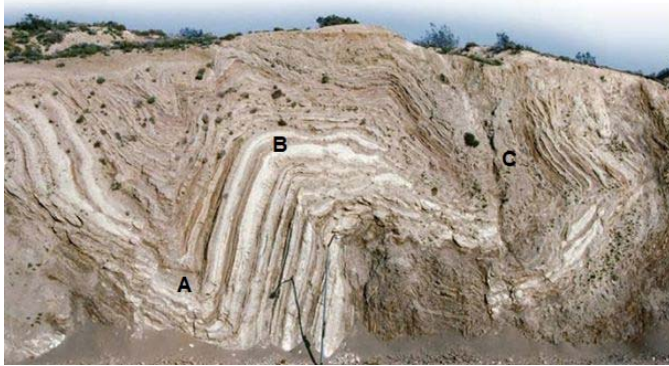


Photo 2

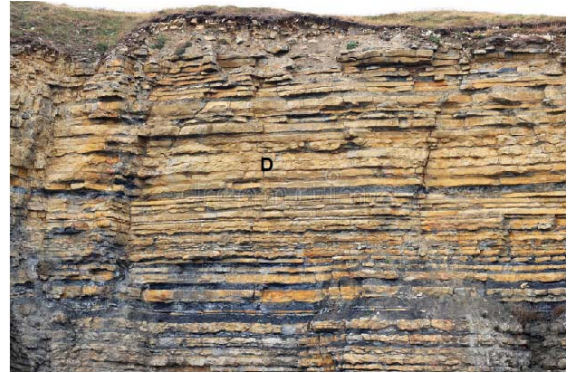


Photo 3



Photo 4



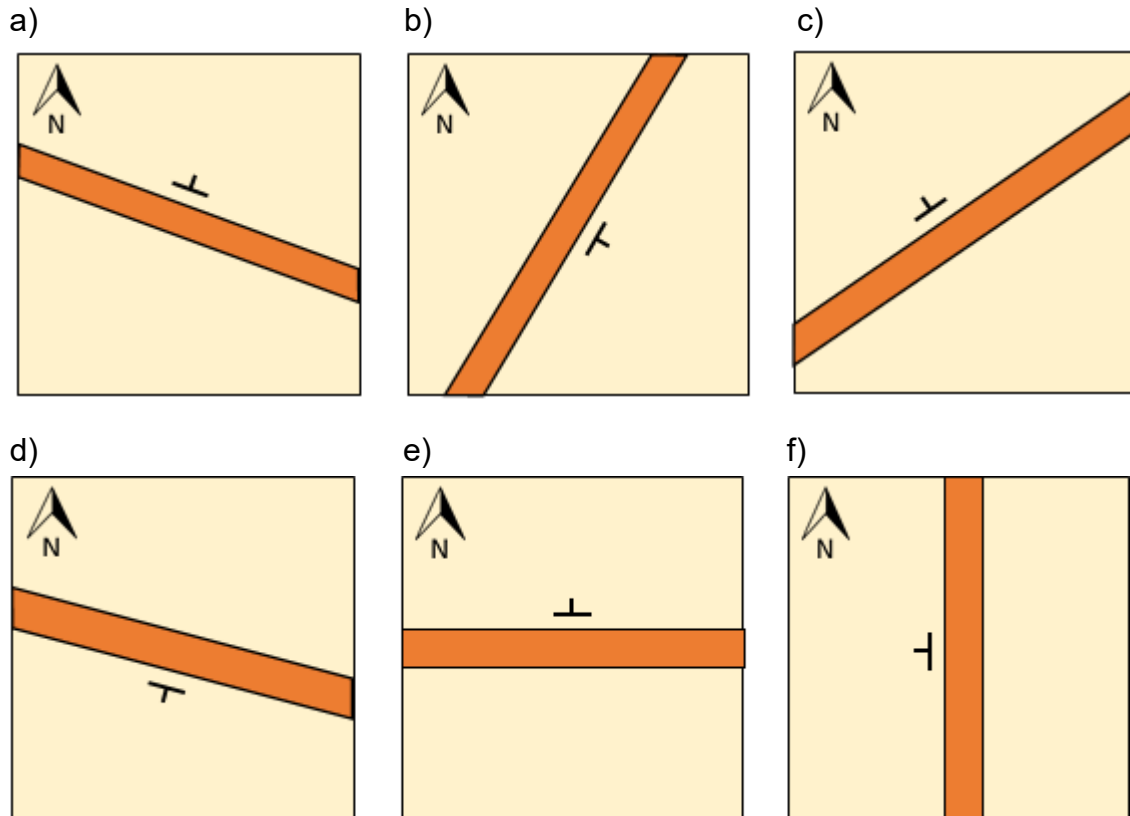
Photo 5



Photo 6



Q6. Each of the six map views below shows the outcrop pattern of a different rock layer. Determine the strike of each layer in **quadrant notation** (e.g., S32°E) and in **azimuthal form** (e.g., 122°).



Q7. For each of the rock cores shown determine: the Core recovery ratio (**CR**), the Rock quality designation (**RQD**), and the **maximum allowable bearing pressure** in MPa.

