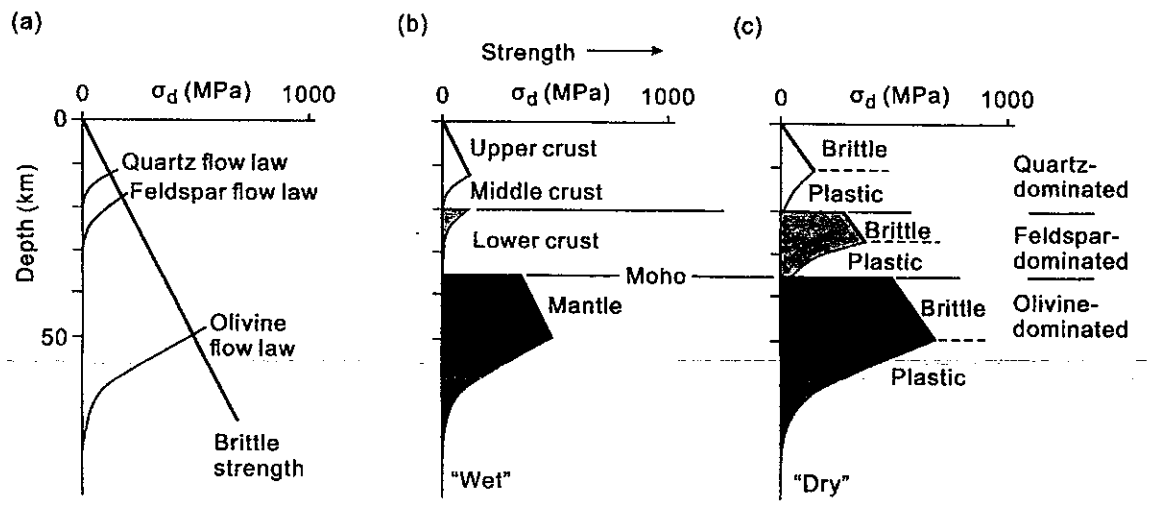
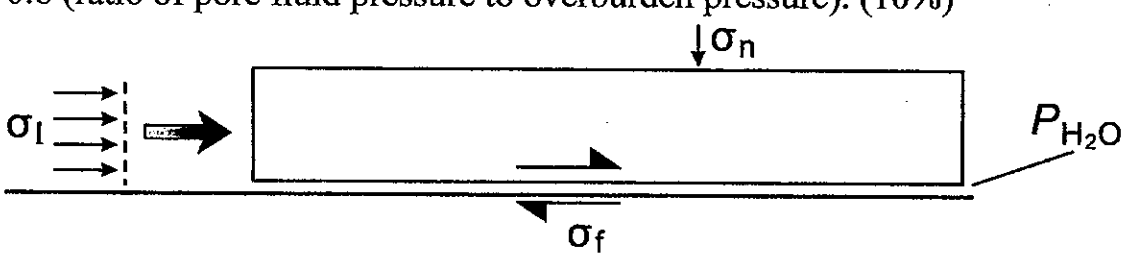
1. Explain the following terms (40%): (1) Anderson's theory; (2) Stick-slip behavior; (3) Fold transposition; (4) Transform fault & transfer fault; (5) Stress & strain; (6) Metamorphic core complex; (7) Pure shear & simple shear; (8) Rake & plunge; (9) Mylonite & cataclasite; (10) Strike-slip duplexes & extensional duplexes.
2. Explain how the tensional fractures form in terms of stress variations during uplift (e.g., thermal and Poisson effects)? (10%)
3. Explain how to use brittle strength and power-law creep flow law with creep parameters for the curves shown in Figure (a). Characterize the rheological profiles of Figures (b) and (c) about the rheological stratification. (10%)



4. Draw and explain the combined fracture criteria in Mohr space (Griffith, Coulomb and Von Mises Criteria). (10%)
5. Explain the pencil cleavage, slaty cleavage, phyllitic cleavage and schistosity in terms of spacing of foliation, mineralogy and temperature. (10%)
6. Explain what is Critical Taper or Critical Wedge Model? How it could be used in orogenic wedge. (10%)
7. Calculate the σ_l applied in the block and σ_f for resistance stress with high fluid pressure at basal detachment in following figure. Explain why the thrust sheet could move in a long distance without crushing rock (Assumption: when applied stress in the block is larger than the uniaxial compressive of sandstone). Assume block dimension is 100 km × 10 km × 5 km, block density is 2700 kg/m^3. The coefficient of friction on the fault (basal detachment) μ_b =0.8 (obeys Byerlee's law). Uniaxial compressive strength is 50 MPa (sandstone). The pore fluid factor λ is 0.8 (ratio of pore fluid pressure to overburden pressure). (10%)



試題隨卷繳回