國立臺灣大學 115 學年度碩士班招生考試試題

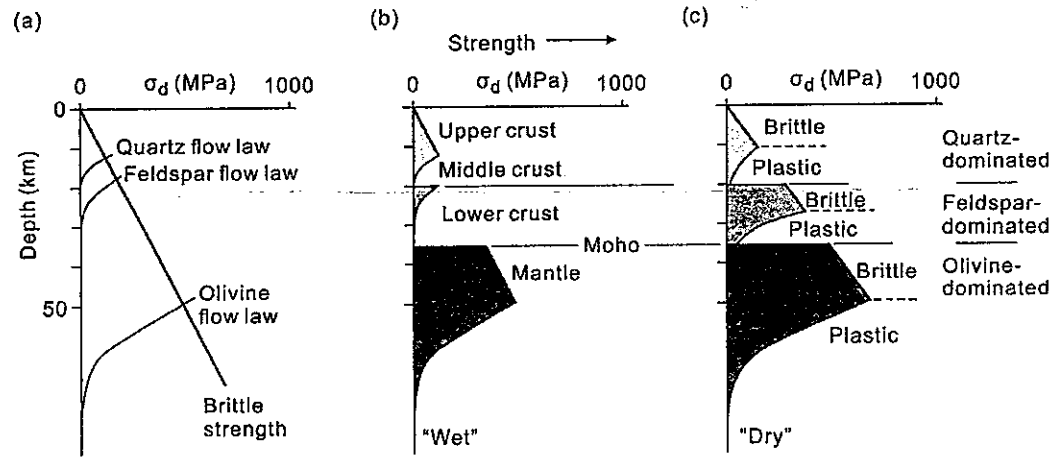
※ 注意：請於試卷內之「非選擇題作答區」依序作答，並應註明作答之大題及小題題號。

第一部分（40 分）：從下列 20 題中至多選擇 10 題作答，每題 4 分。多選不計分，作答時需註明題號。

(1) Pure shear & simple shear; (2) Stick-slip & stable sliding; (3) Deviatoric stress & differential stress; (4) Transform fault & transfer fault; (5) Kink band & Chevron folds; (6) Heave & throw; (7) Strain hardening & strain softening; (8) Rake & plunge; (9) Pencil cleavage & fracture cleavage; (10) Paleostress & reduced stress tensor; (11) In sequence & out of sequence thrusting; (12) Lineament & lineation; (13) Stress & strain; (14) Antiformal syncline & synformal anticline; (15) Mylonite & cataclasite; (16) Deformation band; (17) σ-type & δ-type grain-tail complexes; (18) S-C structures; (19) Balanced cross section; (20) Synthetic & antithetic fractures.

第二部分（60 分）：從下列 10 題中至多選擇 6 題作答，每題 10 分。多選不計分，作答時需註明題號。

(21) Explain how to use brittle strength and power-law creep flow law with creep parameters for the curves shown in following Figure (a). Characterize the rheological profiles of Figures (b) and (c) about the rheological stratification.



(22) Draw and explain the Anderson's theory of faulting and the corresponding fault plane solution (beach ball) with P (σ_1) and T (σ_3) axes. What is the assumption and limitation of Anderson's theory?

(23) Draw and explain the arrays of subsidiary structures associated with left-lateral shear with strain model along a strike-slip fault.

(24) Draw and explain idealized mechanical analogs of elastic deformation, viscous deformation and plastic deformation in terms of stress with strain or strain rate with time.

(25) If σ_1 is vertical and equal to 50 MPa, σ_3 is horizontal, east-west, and equal to 22 MPa, using a Mohr circle construction determine the normal and shear stresses on a normal fault striking north-south and dipping 60°east.

(26) What are the influences of pore pressure in fracturing and faulting?

(27) Draw and explain the following fault-related folding: Fault-bend folding, fault propagation folding décollement folding and trishear zone.

(28) What is a salt diapir? Why salt layer could be used as the seal for storing nuclear waste, hydrogene or hydrocarbons? Please explain it in terms of salt properties and rheology.

(29) Draw and explain the mechanism of the floor-roofed duplex, extensional duplex and strike-slip duplex.

(30) What is the Byerlee's law? Which types of rocks or minerals do not follow Byerlee's Law?

試題隨卷繳回