

※ 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 (20 分)：解釋名詞必答，每題 4 分。

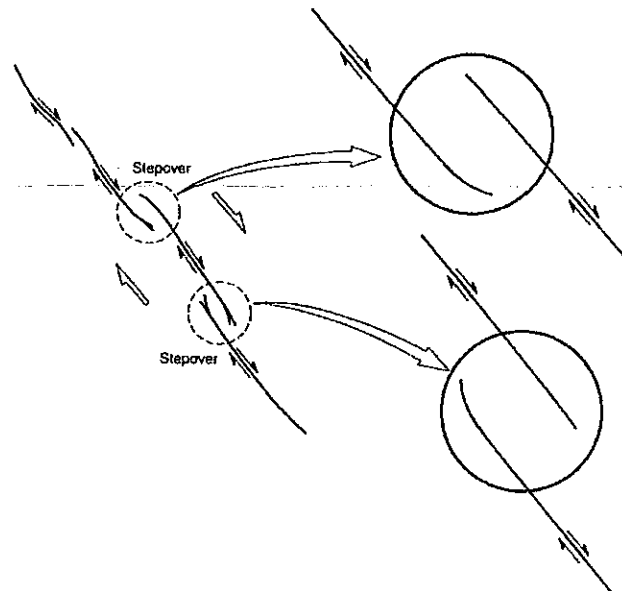
- (1) Stress and strain; (2) Dynamic analysis and tectonic analysis; (3) Thrust fault and reverse fault;  
(4) Cleavage and schistosity; (5) Parallel fold and similar fold.

第二部分 (20 分)：解釋名詞選答，從下列 10 題中選擇 5 題作答，每題 4 分，多選不計分。

- (6) Byerlee's law; (7) Anderson's theory; (8) Griffith Cracks; (9) Fracture termination; (10) Deviatoric stress and mean stress; (11) Mode I, II, III & IV fractures; (12) Balanced cross section; (13) Fold transposition; (14) Pinch-and-swell structures; (15) Metamorphic core complex.

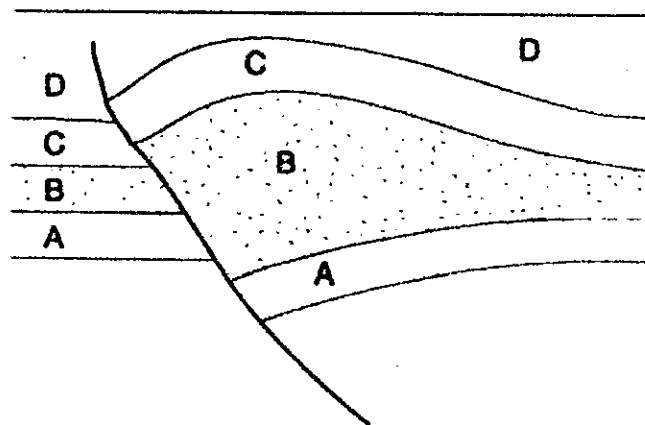
第三部分 (30 分)：問答題必答，每題 10 分。

- (16) Drawing and explain the shear sense indicators in a "dextral shear zone" including brittle and ductile structures.  
(17) Draw and explain the combined fracture criteria in Mohr space. What kind of geological structures observed under different confining pressures in combined fracture criteria?  
(18) Please draw the structure that is more likely to be produced under the stress regime in the two solid circles. The pattern of the structure needs to reflect the kinematic displacement of the corresponding strike-slip fault).



第四部分 (30 分)：問答題選答，從下列題目中選擇 3 題作答，每題 10 分，多選不計分。

- (19) Please draw and explain the structural evolution of the following structural profile in terms of kinematics of faulting.



- (20) Explain how the tensional fractures form in terms of stress variations during uplift (e.g., thermal and Poisson effects)  
(21) Given the principal stresses of  $\sigma_1 = 100$  MPa (vertical),  $\sigma_3 = 20$  MPa (horizontal), determine the

見背面

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normal and shear stresses on a fault plane that strikes parallel to  $\sigma_2$  and dips  $30^\circ$ .

(22) Why salt diapirs? Explain it in detail in terms of salt properties and rheology.

(23) Explain what is Critical Taper or Critical Wedge Model? How it could be used in orogenic wedge.

(24) What is the geometric relationship between folds and bedding in low-grade metamorphic slate areas in terms of cleavage-bedding relationships.

試題隨卷繳回