

國立成功大學

114學年度碩士班招生考試試題

編 號：235

系 所：經濟學系

科 目：總體經濟學

日 期：0210

節 次：第 3 節

注 意：1.不可使用計算機
2.請於答案卷(卡)作答，於
試題上作答，不予計分。

1. (40%) Consider a simple Solow Model with Cobb-Douglas production function given by

$$Y = AK^\alpha L^{1-\alpha}$$

Let s be the saving rate, n be the population growth rate, δ be the depreciation rate, k be the capital-labor ratio.

- (10%) Draw the Solow diagram.
- (10%) Derive the steady-state capital-labor ratio k
- (10%) If the total factor productivity A increases to A' , derive the new steady-state output.
- (10%) If growth accounting is used to decompose the economic growth in output per capita in part (c), what would be the fraction contributed by the Solow residual?

2. (40%) Consider a homogeneous agent model who live for infinite periods. The lifetime utility is given by

$$U(c_0, c_1, \dots) = \sum_{t=0}^{\infty} \beta^t \log c_t$$

The resources constraint is given by

$$c_t + k_{t+1} = A\sqrt{k_t} + (1 - \delta)k_t$$

where c_t , k_t represents consumption and capital and k_0 is given.

- (10%) Derive the Euler equation
- (10%) Rewrite the problem into a recursive form and write down the Bellman equation.
- (10%) Guess a value function and verify that it is/is not a correct guess.
- (10%) Let the value function be $V(k) = k$, iterate the Bellman operator and obtain a new value function.

3. (20%) The United States has been imposing tariffs and trade restrictions on goods made in China. Use an economic model to analyze the effects on the economy of China and the United States.