융용거시경제학 종합시험 샘플

1. Consider a neoclassical growth model without valued leisure. The consumer values a stream of consumption according to $\sum_{t=0}^{\infty} \beta^t u(c_t)$, where 0<$\beta$<1, $u(c) = \log(c)$, c_t is consumption in period t. Output is produced according to

$$y_t = k_k^{\alpha},$$

where $0 < \alpha < 1$. Output in period t can be used for either consumption c_t or investment i_t, and capital accumulates according to $k_{t+1} = (1-\delta)k_t + i_t$.

   (a) Formulate the planner's problem for this economy in recursive form and identify the state variable(s) and control variable(s).

   (b) Derive the Euler equation for the optimal consumption-savings choice.

   (c) Solve explicitly for the steady state capital and output of this economy in terms of parameters.

2. A consumer seeks to maximize $\sum_{t=0}^{\infty} \beta^t u(c_t, l_t)$, where $0 < \beta < 1$, c_t is the consumer's consumption in period t, and l_t is hours of leisure in period t. The utility function u is strictly concave and strictly increasing in both of its arguments. The consumer is endowed with L hours of time in each period, which is available for either leisure or work in period t. The consumer is also endowed with H_0 units of human capital in period 0. Human capital depreciates at rate δ, but can be augmented by working; in particular, human capital evolves according to

$$H_{t+1} = (1-\delta)H_t + Bh_t,$$

where $h_t = L - l_t$ and $B > 0$. The consumer's wage is proportional to his human capital such that his labor income in period t is wH_th_t where w is the wage per effective hours of labor and H_th_t is the total number of effective hours of labor supplied by the consumer in period t. The consumer has no financial assets and is not allowed to save, in other words, the consumer simply consumes his labor income in each period.

   (a) Identify the state and choice variables and formulate the consumer's optimization problem recursively.

   (b) Derive the first-order and envelope conditions for the consumer's problem. Use these conditions to obtain the Euler equation governing the optimal accumulation of human capital