

Assignment #1 - Online submission before June 12, 2013

Draw the nested production function diagram and, write down the equations that define the solution to the following problem:

$$\text{Minimize cost: } C = w_U U + w_S S + p_N N + rK + p_E E + p_D X_D + p_M X_M$$

$$\text{Subject to: } Q = \min \left\{ \frac{f_\sigma (f_{\sigma_{US}} (U, S), f_{\sigma_{KE}} (K, E), N)}{a_1}, \frac{f_{\sigma_{DM}} (X_D, X_M)}{a_2} \right\}$$

Where:

U = unskilled labor

w_U = unskilled wage

S = skilled labor

w_S = skilled wage

N = land

p_N = return to land

E = energy

p_E = price of energy

K = capita

r = return to capital

X_D = domestic raw material

p_D = price of X_D

X_M = imported raw material

p_M = price of X_M

$f_\sigma, f_{\sigma_{US}}, f_{\sigma_{KE}}, f_{\sigma_{DM}}$ is a CES function with parameter (elasticity of substitution) $\sigma, \sigma_{US}, \sigma_{KE}, \sigma_{DM}$ respectively.

a_1 and a_2 is the Leontief technical coefficient.