Problem 1)

Ĉ = -70.4951 + 4.7311βo + 0.0036β­L + 0.28βK + 0.7835βF

Problem 2)

Ceteris paribus, each number (4.73, .0036, &c.) show the amount that C will increase per unit/percentage increase in the β. Labor has the smallest effect on overall price while desired output will increase cost the most. Signs of the variables are covered in the answer to problem 3. With a R2 of .9438 and an adjusted R2 this model seems to be a good fit.

Problem 3)

The sign of the intercept does not meet my previous expectations, as it is negative and this is a cost production function, so negative costs are not viable/real; however, since this is only the intercept, it is both viable and realistic.

For the price variables, however, the signs make perfect sense because a negative sign on labor, capital, or fuel (when producing energy) would make no sense. You don't have workers paying to work for you or consume negative fuel.

Problem 4)

The parameter estimate of **Output** shows that desired/planned output is one of the strongest (in terms of magnitude) in changing the operating price. That is, the higher the Output, the higher the price.

ϵC,F = (ΔC/ΔF)\*(F/C) = βF\*(F/C) = .7835 \* (30.56/44.219) = 1.335

The Elasticity of Cost w.r.t is equal to 1.335. This means that for every 1% increase/decrease in fuel will lead to a 1% increase/decrease in Cost.

Problem 5) (Manual work included along-side software output)

t119, .025 = 1.98

.2801 ± [1.98(.1295)]

.2801 ± (.2564)

[.0231 to .5365]

Problem 6)

H0: Pr\_Labor ≤ 0

H1: Pr\_Labor > 0

CV = 2.358

u = .0036 / .0011 = 3.4379

3.3479 > 2.358

Therefore, the null hypothesis must be rejected. That is, labor parameter is non-negative.

Problem 7)

H0: R2 = 0

H1: R2 ≠ 0

CV = 2.4472 (α = .05, Df = 4/118)

f = (.9438/4)/[(1-.9438)\*118] = 0.0356

0.0356 < 2.4472

So, we fail to reject the null hypothesis.