a) RESET test : F statistic = 26.99 p-value 0.000
=> Ho of correct (linear) specification rejected

JB test : JB statistic = 247.62 p-value 0.000
=> Ho of normally distributed errors rejected

b) RESET test : F staustic = 0.270 p-value = 0.603
=> Ho not rejected

JB test : JB statistic = 8.443 p-value = 0.015
=> Ho is still rejected

c) lot size p-value 0.859
log lot size p-value 0.000
} we prefer to include log lot size

d) 2 of 10 interaction variables are significant at a 5% significance level

e) (1) using SSR $F = \dfrac{(SSR_R - SSR_U)/g}{SSR_U/(n-k)}$

$SSR_U = 22.99$, $SSR_R = 23.64$ $g = 10$ $n = 546$ $k = 22$

$F = 1.471$

(2) using R^2 $F = \dfrac{(R_U^2 - R_R^2)/g}{(1-R_U^2)/(n-g)}$

$R_U^2 = 0.695$ $R_R^2 = 0.687$

$F = 1.471$

(1),(2) $\Rightarrow F \sim F(10, 524)$ $p = 0.147$

$\Rightarrow$ interactions are jointly significant at a 5% significance level

f) general-to-specific approach $\Rightarrow$ 1 interaction effect, that is the effect with the recreational room dummy

g) overestimated, the effect of the condition included in the estimated effect of the air conditioning as the effect of the condition will probably be positive the effect of the airconditioning increases

h) $MAE = \frac{1}{n} \sum_{i=401}^{546} |\log y_i - \log \hat{y}_i|$

$MAE = 0.128$ $\quad \log \hat{y}_i = 11.059$ $\quad sd = 0.372$

$\Rightarrow$ our model has predictive power