Assignment 3

8a)

for normal distribution, total = 600

$\sigma_1 \times 600 = 0.15 \times 600 = 90$

$\sigma_2 \times 600 = 0.24 \times 600 = 144$

$\sigma_3 \times 600 = 0.38 \times 600 = 228$

$\sigma_4 \times 600 = 0.18 \times 600 = 108$

$\sigma_5 \times 600 = 0.05 \times 600 = 30$

dof = 4

$$\chi^2 = \frac{(38-30)^2}{30} + \frac{(125-108)^2}{108} + \frac{(210-228)^2}{228} + \frac{(150-144)^2}{144} + \frac{(77-90)^2}{90}$$

$= 8.3581$

for 5% significance level

$8.3581 < 9.488$

hence normal

for 10% significan level

$8.3581 > 7.779$

hence not normal

Question - 4

Shipment A

Mean ($\bar{x}$) = 4.714

Variance (σ^2) = 0.00947

dof (n) = 12

Shipment B

Mean ($\bar{x}$) = 4.74

Variance (σ^2) = 0.00485

dof (n) = 6

f - test

$$\Rightarrow \frac{0.00947}{0.00485}$$

$$= 1.95$$

∴ They belong to the same group

t - test

$$= \frac{\bar{x}_A - \bar{x}_B}{\sqrt{\frac{\sigma_A^2}{n_A} - \frac{\sigma_B^2}{n_B}}}$$

$$= -0.673$$

∴ They belong to the same group