Practice 6 - Parametric Tests

Example 1:

In a horse farm the mean glucose level in blood serum is $\mu = 3.1$ mmoll^{-1}. Energy preparation was applied in feedingstuff to horses and consequently its effect on glucose level in blood serum of horses has been monitored: in the blood samples in 20 randomly chosen horses the following glucose levels in blood serum in v mmoll^{-1} was found:
3.1, 2.7, 3.3, 3.1, 3.1, 3.2, 3.0, 2.8, 2.9, 2.7, 3.2, 2.7, 2.7, 3.3, 3.2, 3.3, 3.7, 3.9, 3.1, 3.5.
Does the preparation influence glucose level in blood serum of horses?

Example 2:

The effect of light regime on egg weight in layers has been monitored. In usual light regime the egg weights in high-density farm has been observed – in randomly chosen 10 layers the following values (g) have been found:

37, 35, 38, 42, 35, 38, 39, 36, 40, 37.
Afterwards the light regime in high-density farm was adjusted so that to achieve the higher lay-down (for the same time period). In the same 10 layers the eggs have been weigh again and the following values of egg weights have been found (g):

36, 38, 35, 40, 37, 36, 38, 35, 38, 37.

Did the light regime change influence the egg weight?

Example 3:

In a horse farm the effect of energy preparation on the glucose level in blood serum of horses was tested. In 10 horses (control), to which the preparation was not apllied, the following glucose levels in blood serum were measured (in mmol.l-1):

2.1, 2.7, 3.6, 3.1, 3.1, 3.2, 3.5, 2.8, 2.9, 2.7

In 10 horses, to which the preparation was applied, the following glucose levels in blood serum were measured (in mmol.l-1):

1.9, 2.7, 1.7, 3.3, 2.0, 3.8, 3.7, 3.9, 2.1, 3.5

Does the preparation influence the variance of glucose level in blood serum of horses?

Put down into a Word protocol (for every example) :

- AVG ($\bar{x}$), SD and variance (s^2) for samples

- df (v) for samples used in test

- Calculated F-test or t-test statistic (what is appropriate for every example)

- Critical value $F_{crit.}$ or $t_{crit.}$ (what is appropriate for every example)

- Conclusion (answer)