Ques: What is Bessels Correction or Degree of Freedom?

Ans: In sample Variance calculation contains a little bias result. Bessel's correction (i.e. subtracting 1 from your sample size) corrects this bias.
In other words, you'll usually get a more accurate answer if you use **n-1** instead of **n**.

$$S^2 = \frac{\sum(x_i - \bar{x})^2}{n-1}$$

When you have an entire population and calculate any parameter (like the population variance), your results will be accurate. That's because you have all the data about your population. However, when you work with a sample, you've only got a small fraction of the population to work with. Therefore, your answers aren't going to be as accurate as those you would have got, if you had the entire set of data to work with.

In the case of the sample variance , the particular statistic you are working with is the sample mean (**x̄**) instead of the population mean (**μ**). Any x-value in your sample is going to be closer to **x̄** than to **μ**.

This fact alters the sums of squares (in the numerator of the sample variance formula). The sum of squares for **μ** is going to be larger than the sum of squares for **x̄**.

In other words, sample calculations with **n** in the denominator are almost always going to be higher than calculations with **n-1** in the denominator. When you subtract **1** from your sample size, it happens to turn out you're making a fairly good adjustment for the deflated sum of squares figure as long as **n** isn't huge.

In simple words, subtraction of ' **1**' from sample' **n**' is Bessels Correction or Degree of Freedom.