

PHYSIOLOGY HONOURS/SEMESTER-5/ BIOSTATISTICS (DSE-A1)

Qs. (1) Define Mean.

Answer: Statistics of location, also known as **descriptive statistics**, are used to locate **specific positions of a variable** in a frequency distribution along the scale of scores in a sample. They include: Mean, Median, Mode, Percentile, Quartile etc. **MEAN** is the **arithmetic average** of a set of scores. Mean of a **sample** is represented by \bar{X} (known as statistical mean). Mean of a **population** is represented by μ (known as parametric mean).

If, X represents individual score, $\sum X$ is the sum of all its score, n is the sample size then

$$\text{Mean } \bar{X} = \sum X / n$$

Qs. (2) Mention the computational formula of mean value from raw score, grouped data and weighted mean.

Answer: (a) From ungrouped data: $\bar{X} = \frac{\sum x}{n}$

(b) From Grouped data: $\bar{X} = \frac{\text{sum of all scores}}{\text{sample size}} = \frac{\sum fxc}{n}$

(c) Computation of weighted mean: $\bar{X} = \frac{n_1x_1+n_2x_2+\dots+n_kx_k}{n_1+n_2+\dots+n_k}$

Qs. (3) What is the difference between one-tail t-test and two -tail t-test?

Answer: Two-tailed t-test is 'non-directional' and used to find the difference between two means irrespective of the algebraic sign of the difference. Null hypothesis (H_0) proposes that two mean are not significantly different from each other. One-tailed t-test is 'directional' and used to explore whether or not one of the mean is significantly higher (or lower) than the other. In this case, Null hypothesis (H_0) proposes that one of the mean is not significantly higher (or lower) than the other.

Qs. What do you mean by standard error?

Answer: Standard error (SE) of any statistic, in general, is a measure of its **sampling error**, i.e., how much that sample statistic deviates from its corresponding population statistic (parameter). SE can be computed for many sample statistics such as mean, SD, Correlation coefficient etc.

SE is used for the following purpose:

- In testing the significance of the relevant statistic.
- Measuring the variability of a statistic between different samples of a population.
- Compute a *confidence interval* within which the population parameter has a specified probability of falling.

