

## NORMALIZATION METHODOLOGY

**Sub:** Methodology for Normalization of scores (in case exam is conducted in multiple batches for one position)

Since the upcoming exam for the post of Vidyut Sahayak (Junior Engineer) – Electrical is scheduled to be held in multiple batches, it is recommended that the candidates' scores should be normalized before result declaration. The following method is suggested for the same:

### **Methodology:**

1. The average of scores of each batch is calculated first. The average of marks is calculated as mentioned below:

$$\bar{x} = \frac{\textit{Sum of marks of all candidates}}{\textit{Number of candidates in the batch}}$$

2. The batch with highest average is considered as **Base Batch**. All other batches will be normalized against this Base Batch.
3. The **Standard Deviation ( $\sigma$ )** of each batch is calculated. The formula to calculate the Standard Deviation is as mentioned below:

$$\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{N - 1}}$$

Where:

$\sigma$  = *Standard Deviation*

$x$  = *Score of candidate*

$\bar{x}$  = *Mean of Scores of the candidates in the batch*

$N$  = *Number of candidates in the batch*

4. Assuming that Batch 1 is to be normalized against Batch 2 (Base Batch), then the normalized score of candidate is calculated using the following formula:

$$X_n = \frac{S_2}{S_1} * (X - X_{avg}) + Y_{avg}$$

Where:

$S_1$  = *Standard Deviation for Batch 1*

$S_2$  = *Standard Deviation for Batch 2 (Base Batch)*

$X$  = *Score of candidate*

$X_{avg}$  = *Average Score of candidate's batch*

$Y_{avg}$  = *Average score of Base Batch*

$X_n$  = *Normalized Score of candidate*

The same formula can be used in case there are more than two batches for a Post.

5. The following candidates will be eligible for Merit List:
  - a. **Unreserved Category:** Candidates having Normalized score of more than or equal to 50
  - b. **Reserved category (OBC/SC/ST):** Candidates having Normalized score of more than or equal to 45

The following points will be handled during scheduling of candidates:

1. Batches will have nearly equal number of candidates scheduled
2. Equal distribution of candidates as per their categories