About Normalization:

Normalization means adjusting values measured on different scales to a notionally common scale.

Need for Normalization in Exam:

Exam pertaining for a particular post/course could be spread across multiple shifts which will have different question paper for each shift. The normalization is to be done by considering the difficulty level of each set, since the questions may be different in different sets and difficulty level of a particular set may be different from other sets. Hence the normalization of scores needs to be carried out for all the candidates who had written the exam, across shifts for the same post/course.

Mean Standard Deviation Method

$$\widehat{M}_{ij} = \frac{\overline{M}_t^g - M_q^g}{\overline{M}_{ti} - M_{iq}} \left(M_{ij} - M_{iq}\right) + M_q^{gm}$$

$\widehat{M}_{ij}$ = Normalized marks of jth candidate in the ith shift.

$\overline{M}_t^g$ = is the average marks of the top 0.1% of the candidates considering all shifts (No. of candidates will be rounded-up)

M_q^g = is the sum of mean and standard deviation marks of the candidates in the paper considering all shifts.

$\overline{M}_{ti}$ = is the average marks of the top 0.1% of the candidates in the ith shift (No. of candidates will be rounded-up)

M_{iq} = is the sum of mean marks and standard deviation of the ith shift

M_{ij} = is the actual marks obtained by the jth candidate in i^{th} shift.

M_q^{gm} = is the sum of mean marks of candidates in the shift having maximum mean and standard deviation of marks of candidates in the examination considering all shifts.

Note:

1. Calculation of marks will be done up to 5 decimal places.
2. Normalization of scores ensures that the marks accurately reflect the candidates' performance relative to the difficulty of the exam in every Shift. The mathematical process of normalization leads to increase or decrease of marks beyond the maximum or minimum marks. These scores are therefore capped at maximum and minimum marks. However, the selection list and the waiting list is computed based on the actual normalized score.