

Calculation of Normalized Marks for Multi-Session Papers

In UPJEE(Polytechnic) - 2021 examination, some papers may be conducted in multi-sessions. Hence, for these papers, a suitable normalization is applied to take into account any variation in the difficulty levels of the question papers across different sessions. The normalization is done based on the fundamental assumption that "in all multi-session UPJEE(Polytechnic) papers, the distribution of abilities of candidates is the same across all the sessions". This assumption is justified since the number of candidates appearing in multi-session papers in UPJEE(Polytechnic) - 2021 is large and the procedure for allocation of session to candidates is random. Further, it is also ensured that for the same multi-session paper, the number of candidates allotted in each session is of the same order of magnitude.

Based on the above, and considering various normalization methods, the committee arrived at the following formula for calculating the normalized marks for the multi-session papers.

Normalization mark of j^{th} candidate in the i^{th} session \hat{M}_{ij} is given by -

$$\hat{M}_{ij} = \frac{\bar{M}_t^g - M_q^g}{\bar{M}_{ti} - M_{iq}} (M_{ij} - M_{iq}) + M_q^g$$

Where -

M_{ij} : is the actual marks obtained by the j^{th} candidate in i^{th} session

\bar{M}_t^g : is the average marks of the top 0.1% of the candidates considering all sessions

M_q^g : is the sum of mean and standard deviation marks of the candidates in the paper considering all sessions

\bar{M}_{ti} : is the average marks of the top 0.1% of the candidates in the i^{th} session

M_{iq} : is the sum of the mean marks and standard deviation of the i^{th} session.