



TAMIL NADU FOREST UNIFORMED SERVICES RECRUITMENT COMMITTEE

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ADDENDUM TO THE INFORMATION BROCHURE

(Advertisement No.1 / 2018 dated 06.10.2018)

The following shall be substituted as item no. 17(A) in Information Brochure immediately after 17 (vi).

NORMALIZATION PROCEDURE

Tamil Nadu Forest Uniformed Services Recruitment Committee notified online examinations are being carried out in an online Computer Based Test (CBT) mode where the candidates will be shown the questions in a random sequence on a computer screen. The questions consist of multiple choice questions (four answer options out of which the correct one has to be chosen).

The online examination will be held in multiple sessions. Hence, a normalization procedure will be adopted to take into account any variation in the difficulty levels of the question set across different sessions, although all efforts are being undertaken to prepare question paper sets of equal difficulty level.

The normalization procedure is based on the fundamental assumption that "in all multi-session 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 subjects in major examination is large and the procedure of allocation of session to candidates is random. Further it is also ensured that for the same multi-

session subject, the number of candidates allotted in each session is of the same order of magnitude."

The candidate's final score after normalization will be different than the raw score (score arrived with reference to final answer key). 'Final score' may be equal or greater or lesser than the raw score depending on the average, standard deviation, average of marks scored by top 0.1% or 10 candidates (whichever is larger) of a particular session, as compared with sum of averages, standard deviation, average of marks scored by top 0.1% or 10 candidates (whichever is larger) of all the sessions.

NORMALIZATION FORMULA :-

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

N_{ij} : is the Normalized marks obtained by the jth candidate in ith session.

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

M_{iq} : is the sum of the mean marks and standard deviation of the ith session i.e. $(\mu + \sigma)_i$.

M_{gt} : is the average of the top 0.1 % or top 10 (whichever is larger) candidates considering all sessions.

M_{gg} : is the sum of mean and standard deviation marks $(\mu + \sigma)$ of the candidates in the paper considering all sessions.

M_{ti} : is the average marks of the top 0.1% of the candidates or top 10 (whichever is larger) in the ith session

M_{iq} : is the sum of the mean marks and standard deviation of the ith session

On Rearranging we get the formula as

$$\frac{N_{ij} - M_{ig}}{M_{ij} - M_{iq}} = \frac{\bar{M}_t^g - M_{ig}}{\bar{M}_{ti} - M_{iq}}$$

For better understanding the same expression can be written also as

$$\frac{NS - (\mu + \sigma)}{MS(0.1\%) - (\mu + \sigma)} = \frac{AS - (\mu + \sigma)_i}{MS(0.1\%)_i - (\mu + \sigma)_i}$$

Where,

NS = Normalized Score

AS = Actual Score

MS = Mean Score

After re-arrangement we have

$$NS = (\mu + \sigma) + [MS(0.1\%) - (\mu + \sigma)] * \frac{[AS - (\mu + \sigma)_i]}{[MS(0.1\%)_i - (\mu + \sigma)_i]}$$

Assumptions:

1. Roll number of all applicants are randomly distributed.
2. All applicants with in different shifts are also randomly distributed i.e. if tests are conducted in 12 different shifts then none of shift contains same type of applicants. Here type of applicants means students from same school or from neighboring areas.
3. Every shift contains different paper with all questions distinct.
4. The question paper in different shifts may or may not have same difficulty level.
5. Each applicant in one particular shift has same paper but has different ordering of questions as well as different ordering of options of a particular question.
6. All questions have been allotted the same marks.

NOTE: Above Normalization Formula is used by GATE / CAT / RAILWAYS etc. and is widely accepted

Member Secretary,
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