



Document on Normalization

CET CELL has conducted examinations in multiple shifts for B.Ed & ELCT. The candidates had been given different sets of questions in every shift and it is quite possible that in spite of all efforts of maintaining equivalence among various question papers, the difficulty level of these question papers administered in different shifts may not be exactly the same. In order to overcome such a situation, **Normalization Method** will be used for ensuring that candidates are neither benefitted nor disadvantaged due to the difficulty level of the examination.

The process of Normalization is an established practice for comparing candidate scores across multi shift papers and is similar to those being adopted in other large educational selection tests conducted in India.

Percentile Scores: Percentile scores are scores based on the relative performance of all those who appear for the examination. Basically, the marks obtained are transformed into a scale ranging from 100 to 0 for each session of examinees.

The Percentile Score indicates the percentage of candidates that have scored EQUAL TO OR BELOW (same or lower raw scores) that particular Percentile in that examination. Therefore the topper (highest score) of each session will get the same Percentile of 100 which is desirable. The marks obtained in between the highest and lowest scores are also converted to appropriate Percentiles.

The Percentile Scores will be calculated up to 7 decimal places to avoid bunching effect and reduce ties.

The Percentile score of a Candidate is calculated as follows:

$$\frac{100 * (\text{No. of candidates appeared in the session with raw score} \leq \text{the candidate's Score})}{\text{Total no. of candidates in the session}}$$

Note: The Percentile of the Total shall NOT be an aggregate or average of the Percentile of individual subject. Percentile score is not the same as percentage of marks obtained.

Example: Suppose a test was held in 4 sessions of examinees as per details given below: - (Allocation of Days and shifts were done randomly)

(a) Distribution of candidates were as follows:

Session-1: Day-1 Batch 1 (D1-B1), Session-2: Day-1 Batch-2 (D1-B2)

Session	Day/Batch	No. of Candidates			Total Marks	
		Absent	Present	Total	Highest	Lowest
1	D1 B1	150	2249	2399	126	42
2	D1 B2	186	2272	2458	127	39

In this method of scoring, the HIGHEST RAW SCORE in each paper (irrespective of the raw scores) will be the 100 Percentile indicating that 100% of candidates have scores equal to or lesser than the highest scorer/ topper for that session.

Highest Raw Score and Percentile Score : All the highest raw scores will have normalized Percentile Score of 100 for their respective session.

Session	Total candidates appeared	Highest Raw Score	Candidates who scored EQUAL OR LESS THAN Highest Raw Score	Percentile Score	Remarks
1	2249	126	2249	100.0000000	i.e. All the
				$[(2249/2249)*100]$	highest raw
2	2272	127	2272	100.0000000	scores would be
				$[(2272/2272)*100]$	normalized to

STEP-BY-STEP PROCEDURE FOR NORMALIZATION AND PREPARATION OF PERCENTILE SCORE:

Step-1: Distribution of Examinees in one day and in two shifts per day Candidates would be distributed into two sessions randomly so that each session has approximately equal number of candidates. These two sessions would be as follows:

Session-1: Day-1 Batch 1 (D1-B1), Session-2: Day-1 Batch-2 (D1-B2),

In the event of more number of days or more number of shifts, the candidates will be divided accordingly.

This will ensure that there is no bias in the distribution of candidates who shall take the examination. Further, with a large population of examinees spread over the entire country the possibility of such bias becomes remote.

Step-2: Preparation of Results for each Session: The examination results for each session would be prepared in the form of Raw Scores

a. B.Ed. CET Percentile of all B.ed. candidate of the session =

$$100 \times \frac{\text{No. of candidates appeared from the session with raw score equal to or less than T1 score}}{\text{Total no of candidates appeared in the session}}$$

b. ELCT Percentile =

$$100 \times \frac{\text{No. of candidates appeared from the session with raw score equal to or less than T1 score}}{\text{Total no of candidates appeared in the session}}$$

- c. Mapping B.ed. scores and percentile with ELCT candidates
- d. Calculating Totals of ELCT candidates by utilizing ELCT & B.ed. Score

e. Total Percentile (TP) =

$$100 \times \frac{\text{No. of candidates appeared from the session with raw score equal to or less than T1 score}}{\text{Total no of candidates appeared in the session}}$$

Step-3: Compilation of Total CET score:

The Percentile scores for the Total Raw Score for all the two sessions (Session- 1: Day-1 Batch 1-1, Session-2: Day-1 batch-2 as calculated in Step-2 above would be merged and shall be called the CET Percentile scores which will then be used for compilation of result.

The Percentile of all two sessions will be calculated separately for the Total raw score merge the Percentile Scores calculated above of all two sessions for the Total Percentile for preparation of CET scores.

Day 1, Batch-1						
Roll Number	B.Ed. CET Score	B.Ed. CET Percentile	ELCT Score	ELCT Percentile	Total Score	Total Percentile
D1-B1-3001	79	99.9346192	47	100.0000000	126	100.0000000
D1-B1-3002	81	99.9738477	43	99.7911723	124	99.9905732
D1-B1-3003	78	99.8953907	45	99.9335548	123	99.9717195
D1-B1-3004	76	99.7842432	46	99.9715235	122	99.9528658
D1-B1-3005	80	99.9607715	41	99.1457048	121	99.9151584
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
D1-B1-3006	20	0.4772802	26	40.5790223	46	2.0927602
D1-B1-3007	17	0.3072900	28	51.8652112	45	1.7722474
D1-B1-3008	20	0.4772802	24	30.2040816	44	1.5177225
D1-B1-3009	15	0.2288330	28	51.8652112	43	1.2820513
D1-B1-3010	14	0.1830664	28	51.8652112	42	1.0935143

Day 1, Batch-2						
Roll Number	B.Ed. CET Score	B.Ed. CET Percentile	ELCT Score	ELCT Percentile	Total Score	Total Percentile
D1-B2-3011	85	100.0000000	42	98.8920726	127	100.0000000
D1-B2-3012	78	99.7799266	47	100.0000000	125	99.9904943
D1-B2-3013	81	99.9733244	43	99.4460363	124	99.9429658
D1-B2-3014	78	99.7799266	45	99.8758357	123	99.9334601

D1-B2-3015	75	99.2197399	47	100.0000000	122	99.9049430
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
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D1-B2-3016	19	0.5468489	24	43.8586437	43	2.0057034
D1-B2-3017	19	0.5468489	23	38.8634193	42	1.6825095
D1-B2-3018	11	0.0600200	30	71.7000955	41	1.4543726
D1-B2-3019	18	0.4468156	22	33.9637058	40	1.2642586
D1-B2-3020	16	0.2600867	23	38.8634193	39	1.1216730

Merge the Percentile Scores calculated above of all two sessions for the **Total Percentile, B.ed Percentile, and ELCT Percentile** for preparation of CET scores

Both batch 1 and 2 sessions combined						
Roll Number	B.Ed. CET Score	B.Ed. CET Percentile	ELCT Score	ELCT Percentile	Total Score	Total Percentile
D1-B1-3001	79	99.9346192	47	100.0000000	126	100.0000000
D1-B2-3011	85	100.0000000	42	98.8920726	127	100.0000000
D1-B1-3002	81	99.9738477	43	99.7911723	124	99.9905732
D1-B2-3012	78	99.7799266	47	100.0000000	125	99.9904943
D1-B1-3003	78	99.8953907	45	99.9335548	123	99.9717195
D1-B1-3004	76	99.7842432	46	99.9715235	122	99.9528658
D1-B2-3013	81	99.9733244	43	99.4460363	124	99.9429658
D1-B2-3014	78	99.7799266	45	99.8758357	123	99.9334601
D1-B1-3005	80	99.9607715	41	99.1457048	121	99.9151584
D1-B2-3015	75	99.2197399	47	100.0000000	122	99.9049430
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↓	↓	↓	↓	↓	↓	↓
D1-B1-3006	20	0.4772802	26	40.5790223	46	2.0927602

D1-B2-3016	19	0.5468489	24	43.8586437	43	2.0057034
D1-B1-3007	17	0.3072900	28	51.8652112	45	1.7722474
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D1-B1-3009	15	0.2288330	28	51.8652112	43	1.2820513
D1-B2-3019	18	0.4468156	22	33.9637058	40	1.2642586
D1-B2-3020	16	0.2600867	23	38.8634193	39	1.1216730
D1-B1-3010	14	0.1830664	28	51.8652112	42	1.0935143

NOTE: The roll numbers and score provided in the above table are only forrepresentational purpose.