UNIVERSITY OF CALCUTTA

Notification No. CSR/ 59 /16

It is notified for information of all concerned that in terms of the provisions of Section 54 of the Calcutta University Act, 1979, (as amended), and, in exercise of his powers under 9(6) of the said Act, the Pro-Vice-Chancellor for Academic Affairs acting as the Vice Chancellor has, by an order dated 27.10.2016 approved **some modifications in the existing guidelines for the B.A. Honours Course of Study in Education, Paper –VIII, Group-B (Practical),** under this University as laid down in the accompanying pamphlet.

The above shall be effective from the academic session 2016-2017.

SENATE HOUSE
KOLKATA-700073
The 15th November, 2016

(Prof. Dr. Soma Bandyopadhyay)
Registrar (Acting)
15/11/16

(Cover page of Pedagogy Practical note book).

PEDAGOGY PRACTICAL

EDUCATION HONOURS

PAPER - VIII, GROUP - B

B.A. (HONOURS) PART -III EXAMINATION, 20--

UNDER 1+1+1 2009 REGULATIONS

HELD BY

UNIVERSITY OF CALCUTTA

ROLL NO. XXXX-XX-XXXX

REGISTRATION NO. XXX-XXXX-XXXX-XX

(Cover page of Statistics Practical note book).

STATISTICS PRACTICAL

EDUCATION HONOURS

PAPER - VIII, GROUP - B

B.A. (HONOURS) PART -III EXAMINATION, 20--

UNDER 1+1+1 2009 REGULATIONS

HELD BY

UNIVERSITY OF CALCUTTA

ROLL NO. XXXX-XX-XXXX

REGISTRATION NO. XXX-XXXX-XXXX-XX

General instructions:

EXPERIMENT NO. 1

PROBLEM:

To determine the immediate memory span by auditory method.

BASIC CONCEPT:

This simple method of determining immediate memory span was introduced by Jacob in the year 1887. Memory span is the quantity of a given material reproduced by the individual perfectly after one presentation. It correlates very much with span of attention. The materials or items may be digits, dots, words, alphabets etc. The experiments have shown that memory span for digits is limited and it varies with age and intelligence. The Stanford Binet Scale has given the average memory span for different age groups:-

- 2 digits at the age of 2 ½ years
- 3 digits at the age of 3 years
- 4 digits at the age of 4 ½ years
- 5 digits at the age of 7 years
- 6 digits at the age of 10 years

Memory span is considered to be a factor of intelligence and should be studied experimentally.

PRELIMINARIES:

Name of the subject:

Age of the subject:

Sex of the subject:

Condition of the subject:

Date of the Experiment:

Time of the Experiment:

MATERIALS REQUIRED:

1. 3 lists of 3-12 digits arranged in 10 rows, first row starting with 3digits and last row ending with 12 digits;
2. Paper
3. Pen
4. Pencil
5. Rubber
6. Scale
7. Graph paper.

EXPERIMENTAL PROCEDURE:

1) **Rules for construction of list of digits:**
   I. Digits are chosen at random and written horizontally in the form of a list.

II. In every list there should be 10 rows of digits in increasing order, starting with 3 digits and ending with 12 digits.
III. The first and last digit in a row should not be identical (For example, if a row starts with digit 3 then the last digit of that row cannot be 3 again).
IV. The last digit of the preceding row should not be identical with the first digit of the following row (For example, if the last digit of the preceding row is 4 then the first digit of the following row cannot be 4).
V. In a row placing of consecutive digits either forward or backward should be avoided (For example 345or 987).
VI. Any kind of association [like1947, A.P. (arithmetic progression) series: 1,3,5,7 or G.P. (geometric progression) series: 3, 9, 27 should be avoided].
VII. 0 digits cannot be used.

LIST - 1	**LIST - 3**	**LIST - 3**
618	372	739
2583	Xxxx	Xxxx
xxxxx	Xxxxx	Xxxxx
Xxxxxx	Xxxxxx	Xxxxxx
Xxxxxxx	Xxxxxxx	Xxxxxxx
Xxxxxxxx	Xxxxxxxx	Xxxxxxxx
Xxxxxxxxx	Xxxxxxxxx	Xxxxxxxxx
Xxxxxxxxxx	Xxxxxxxxxx	Xxxxxxxxxx
Xxxxxxxxxxx	Xxxxxxxxxxx	Xxxxxxxxxxx
xxxxxxxxxxxx	xxxxxxxxxxxx	xxxxxxxxxxxx

2) Instruction to the subject:

Proper rapport was established between the experimenter and the subject. Then the subject has been given the following instruction "I shall call out certain numbers and you will have to repeat them in the same order as soon as I finish them."

3) Experiment Proper:

The environment under which the experiment has been conducted was congenial and quiet. The first list was presented to the subject by reading each row aloud. Each presented row was followed by reproduction of the same by the subject. The procedure continued till the subject failed to repeat exactly the digits of a particular row in the same sequence as has been read out to him/her by the experimenter. The experimenter recorded the number of digits reproduced in a row by the subject in the table 1 and if while reproducing the digits the subject makes any mistake then the experimenter marks the mistake by putting circle around the wrong digit. In the similar way the second list of digits was presented to the subject after 10 minutes of rest and the digits reproduced by the subject were recorded. When the subject failed to reproduce the digits correctly the experiment for that list ended. Again, the third list of digits was presented to the subject after 10 minutes of rest and the reproduction of correct digits of each row by the subject was recorded.

TABLE-1

Number of digits reproduced

No. of rows	No. of digits presented	LIST -1	LIST - 2	LIST -3
1	**3**	Xxx	Xxx	Xxx
2	**4**	Xxxx	Xxxx	Xxxx
3	**5**	Xxxxx	Xxxxx	Xxxxx
4	**6**	Xxxxxx	Xxxxxx	Xxxxxx
5	**7**	xxxxxxx	Xxxxxxx	Xxxxxxx
6	**8**	Xxxxx**O**xx	xxxxxxxx	xxxxx**O**x**O**
7	**9**		xxx**OOO**xxx	
8	**10**			
9	**11**			
10	**12**			

RESULT:

For list 1 my subject could reproduce all the 7 number of digits of the 5th row in correct order. Hence, for list 1 his/her memory span is 7. For list 2 the subject could reproduce all 8 digits of the 6th row in exact sequence and so his/her memory span for list 2 is 8. Similarly, for list 3 he/she could reproduce again 7 digits of the 5th row in correct order and so his/her memory span for list 3 is 7. Therefore, the average memory span of my subject is 7+8+7/3 = 17.33 which is shown in Table-2 given below.

TABLE - 2

AVERAGE MEMORY SPAN

NO.OF LISTS	MAXIMUM REPRODUCTION	AVERAGE MEMORY SPAN
1	X (7)	X+Y+Z/3 = (7+8+7/3=17.33)
2	Y (8)	
3	Z (7)	

INTROSPECTIVE REPORT:-

The subject is required to write an introspective report stating briefly but clearly his/her experience during the whole process of experimentation. At the end of the report the subject must put his/her full signature and date. (It is compulsory to make the subject write introspective report even during the final examination).

DISCUSSION & GRAPHICAL REPRESENTATION:-

It can be observed that there is a specific pattern in the subjects' procedure of memorization. This experiment comprised of three lists of numeric digits. The lists were presented to the subject one after another maintaining required time interval. It was found that my subject could altogether reproduce 7 digits, 8 digits and again seven digits for list 1, 2 and 3 respectively. Hence, it can be concluded from the above experiment that the average memory span of my subject is ------ .

For, pictorial representation of the findings of this study so that it will be much easier to understand and interpret, three separate line graphs, one for each lists were used. The "x" axis in the graph represented number of presentation by the experimenter and the "y" axis represented the number of digits reproduced by the subject. On

y - axis the maximum/highest reproduction of digits in correct sequence for each list was marked by a small circle around the highest point plotted on the graph.

Note: ***Graphical representation of the findings to be shown.***

In regard to educational implications it can be said that the concept of memory span has proved to be very useful especially in the academic field. It can help the teacher in preparing class routine/time table as well as lesson plans for any particular class consisting of students of more or less same age group with an approximate similar average memory span. Since this is also an indication of the intelligence of the students so this knowledge can be used by the teachers effectively while teaching or forming groups and engaging students in various group activities. Thus, the general performance of the students can be predicted once the memory span is determined. (More points can be added).

General instructions

MODEL EXPERIMENT No --2

PROBLEM

To determine the index of complete learning or capacity of memorization.

BASIC CONCEPT:

Memorization is a form of mental activity by which we can call back or revive a previously learned material or experience. The method of learning used in memorization is greatly dependent on the nature of the material and the subject's intelligence. As materials for memorization are not always the same, the method and degree of learning also varies considerably. German Psychologist Ebbinghaus was the first to introduce the nonsense syllables as learning material to determine the capacity of memorization. Nonsense syllables were used to minimize the effect of association during the process of memorization.

PRELIMINARIES:

Name of the Subject:

Sex of the Subject:

Age of the Subject:

Condition of the Subject:

Date of the Experiment:

Time of the Experiment:

MATERIALS REQUIRED:

1. Two lists of nonsense syllables containing ten (10) nonsense syllables in each list.
2. Paper
3. Pencil
4. Pen
5. Scale
6. Rubber
7. Graph paper

EXPERIMENTAL PROCEDURE:

I) Rules for Construction of list of nonsense syllables:

The lists shall be prepared on the basis of the following rules:

1. Ten nonsense syllables each comprising of three letters had to be developed for each list with two consonants and a vowel in between them.
2. Two consonants should not be repeated in the same row.
3. The starting and ending consonants should not be repeated in the consecutive rows.
4. The same vowel should not be repeated in consecutive rows.
5. Meaningful association with the syllables should be avoided.
6. Alphabets like Q, W, X, Y & Z should be avoided.

List of Nonsense Syllables

Serial no.	List-1	List-2
1.	TAM	SOJ
2.	Xxx	Xxx
3.	Xxx	Xxx
4.	Xxx	Xxx
5.	Xxx	Xxx
6.	Xxx	Xxx
7.	Xxx	Xxx
8.	Xxx	Xxx
9.	Xxx	Xxx
10.	xxx	Xxx

2) Instruction to the subject:

Proper rapport was established between the experimenter and the subject. Then the subject had been given the following instructions: "Please be attentive. I shall present orally ten (10) nonsense syllables, one by one. After each presentation (10 nonsense syllables), please try to reproduce them in the same order as far as possible. The process will continue until you can reproduce all the syllables correctly and in the proper order."

3) Experiment Proper:

The experimenter asked the subject to sit comfortably and then she/he read out the syllables slowly and clearly and after completion asked the subject to reproduce the said syllables orally in the same order. The experimenter recorded the number of correct syllables reproduced by the subject and went on repeating the process till the subject could memorize and reproduce the whole list. When the subject could correctly reproduce the whole list the experiment for that particular list ended. The experimenter noted down the total number of trials that the subject required for memorising and reproducing the whole list. After completion of first list ten (10) minutes of rest was provided to the subject. Then, in the similar manner the second list was presented to the subject and his/her responses were noted by the experimenter. The subject's index of complete learning for each list is the total number of trials required to recall the whole list correctly.

EXPERIMENTAL DATA

The subject's correct reproductions were recorded in Table- 1 & 2 as given below:

TABLE- 1

Index of complete learning (list 1)

Serial no.	Nonsense Syllables (List-I)	No. of Trials						Index of complete Learning
		T1	**T2**	**T3**	**T4**	**T5**	**T6**	
1	TAM	✓	✓	✓	✓	✓	✓	**6** (as applicable)
2	XXX		✓	✓	✓	✓	✓	
3	XXX		✓	✓	✓	✓	✓	
4	XXX			✓	✓	✓	✓	
5	XXX			✓	✓	✓	✓	
6	XXX				✓	✓	✓	
7	XXX				✓	✓	✓	
8	XXX					✓	✓	
9	XXX						✓	
10	XXX						✓	
No. of syllables correctly reproduced		**1**	**3**	**5**	**7**	**8**	**10**	
% of correct reproduction		**10**	**30**	**50**	**70**	**80**	**100**	

TABLE- 2

Index of complete learning (list 2)

Serial No.	Nonsense Syllables (List-II)	No. of Trials					Index of complete Learning
		T1	**T2**	**T3**	**T4**	**T5**	
1	SOJ	✓	✓	✓	✓	✓	**5** (as applicable)
2	XXX	✓	✓	✓	✓	✓	
3	XXX	✓	✓	✓	✓	✓	
4	XXX		✓	✓	✓	✓	
5	XXX		✓	✓	✓	✓	
6	XXX			✓	✓	✓	
7	XXX				✓	✓	
8	XXX					✓	
9	XXX					✓	
10	XXX					✓	
No. of syllables correctly reproduced		**3**	**5**	**6**	**7**	**10**	
% of correct reproduction		**30**	**50**	**60**	**70**	**100**	

RESULT:

My subject took six (6) numbers of trials to reproduce all the ten (10) nonsense syllables of List 1 in correct order and took 5 trials for correct reproduction of List 2. Therefore, her/his index of complete learning for list 1 and list 2 is 6 and 5 respectively. The average capacity of memorization is 5.5 which are shown in Table-3 given below.

TABLE-3

Average capacity of memorization

List no.	Index of complete Learning	Average capacity of memorization
1	6	6+5/2=5.5 (as applicable)
2	5	

INTROSPECTIVE REPORT:

The subject is required to write the introspective report stating briefly but clearly his/her experience during the whole process of experimentation. At the end of the report the subject must put his/her full signature and date. (It is compulsory to make the subject write introspective report even during the final examination).

DISCUSSION & GRAPHICAL REPRESENTATION:

It can be observed from the experiment that there is a specific pattern in the subject's procedure of memorization. The experiment consisted of two lists of nonsense syllables comprising of ten (10) nonsense syllables in each list. When the first list was read out the subject could reproduce the whole list in the correct order after altogether 6 trials. He /she could reproduce at first one, then three, then gradually five, seven, eight and finally all ten in six numbers of trials. Ten (10) minutes of rest was provided to the subject. Then again the second list was presented. My subject took altogether 5 trials to reproduce all the ten nonsense syllables of list 2 correctly and in the same sequence as presented to him/her. Her/his index of complete learning for list 1 and list 2 is 6 and 5 respectively. The average capacity of memorization of my subject is ----------. The result shows a ---------- trend in my subject's capacity of memorization.

For pictorial representation of the findings so that it becomes much easier to understand and interpret line graph has been used. In the graph, X-axis represents number of trials required by the subject to reproduce the non sense syllables correctly and in the same sequence for each list and the Y-axis represents the percentage (%) of correct reproduction of non sense syllables by the subject.

In regard to educational implication it can be said that the nature of the material which is to be learned or memorized and the subject's intelligence plays an important role in influencing the process of memorization. Simple, meaningful materials are much easier to learn and remember than difficult and meaningless materials. This experiment provides scientific knowledge about the subject's capacity of memorization. On the basis of the experiment it can be said that even meaningless material (like the list of nonsense syllables used in this experiment) can also be effectively memorized by a learner through continuous repetition and practice. More points can be added.

General instruction

EXPERIMENT - 3

PROBLEM: **To compare recall and recognition as modes of measuring retention.**

BASIC CONCEPT:

Memorisation is a mental process to store in memory previously learned items, materials or experiences and to reproduce them correctly when required. The four processes involved in memorisation are learning, retention, recall and recognition. In order of time, recall and recognition comes after retention. But there is some sense in studying them first because they are used as indications of retention.

The term 'recall' is used to cover the whole range of activities that are reactivated after something being learned. Sometimes, the word reproduction is preferred in place of recall. There are varieties of cases which are previously learned and reproduced. For example:

1. Recall of lists, items, facts, materials of any sort which are previously learned and is now intentionally remembered.
2. Execution of any learned act.
3. Reverie or free association without any intention of recalling.
4. Controlled association occurs in adding, reading or conversation
5. Thinking as in problem solution and mastery of the novel situations.

On the other hand recognition is dependent on the perception of the objects. An object is 'recognised' as an individual thing or person when it is 'perceived' as an object of a certain class. The recognition processes differ functionally from those of recall in that recognition starts with the object given where as in recall the object has to be found. Often a face or a name which cannot be recalled is recognised promptly when presented. In a sense, then, recognition is easier than recall.

PRELIMINARIES:

1. Name of the subject:
2. Age of the subject:
3. Sex of the subject:
4. Condition of the subject:
5. Date and time of the experiment:
6. Surrounding environment: calm and quiet

MATERIALS REQUIRED

1. Three lists of disconnected words consisting of three (3) letters each.
    a. List A: consisting of 15 words
    b. List B: consisting of 25 words
    c. List C: consisting of 25 words of which 10 words are to be taken from list B and 15 new words to be constructed.
2. Paper

3. Pen
4. Pencil
5. Rubber
6. Scale
7. Graph paper

PROCEDURE

a. **Rules for construction of word list**:

I. Disconnected words like red, man, bow, lip, sun and likewise which are not at all associated with each others are most likely to be preferred.
II. Care must be taken so that the words in each list are not associated.
III. Each word must be clearly written.
IV. Correct spellings must be ensured.

b. **Instructions to the subject**:

At first proper rapport was established with the subject and then the following instruction was given to him/her: "Please be attentive. I shall show you a list of words. You will be given 15 seconds to see them. After that you will have to write the words you have seen in the list." List A was then presented to the subject and removed after 15 seconds. The subject was given a paper and asked to write down those words that he/she could remember from List A within maximum two minutes. An interval of 5 minutes was given and during this time some light talk with the subject was carried out to avoid inhibition from List A.

In the next part of the experiment another list of twenty five (25) new words was prepared by the experimenter following the same set of rules as stated earlier and it was presented before the subject. The subject was then requested to study this new list denoted as list B attentively for 15 seconds. However, the subject was not asked to recall anything from List B immediately.

Next list C was prepared. It consisted of twenty five (25) words of which ten (10) words was taken from list B and placed in list C but not together in the same sequence as in list B but distributed and mixed with another new set of fifteen (15) words. The list was prepared by the experimenter following the same set of rules.

Now the subject was given the following instruction. "Please be attentive and carefully follow the instructions. You have seen list B. Now I shall show you another list (List C) which consists of twenty five (25) words. You are required to study the new list for 15 seconds. In list C you may find some words which you have already seen in List B. You will be given two (2) minutes time to recognise and write those words from List C which are common to List B.

c. **Experiment proper**:

Three lists: List A comprising of 15 words

List B " " 25 "

List C " " 25 " were prepared by the experimenter. Proper rapport was established with the subject. The lists were presented to the subject one after another maintaining the time gap. Paper and pencil was provided to recall and write the words from List A and recognise and write the common words of List B from List C. The number of correctly recalled

words from list A is his/her recalled score and the number of correct words from List B, which are recognised from the list C, is the subject's recognition score.

RESULT:

Table-1 showing percentage of correctly recalled words

List A	Recalled words	Correctly recalled words	Percentage (%) of correctly recalled words
1. SUN			No. of correctly recalled words/ total no. of words
2. BOX			
3. XXX			
4. XXX			
Upto 15.			

Table-2 showing percentage of correctly recognised words

List B	List C	Recognised words	Correctly recognised words	Percentage (%) of correctly recognised words
1.BAG	1.NUT	1.XXX	1.XXX	No. of correctly recognised words / total no. of common words of list B and C. (Not the total no. of words).
2.POT	2.RAY	2.YYY	2.XXX	
3.XXX	3.XXX	3.YYY	3.	
4.XXX	4.YYY	4.XXX	4.	
5.XXX	5.XXX	5.YYY	5.	
Upto 25.	Upto 25			

Table-3 showing comparative result of recall and recognition score in percentage

Mode of retention	Score in percentage	Comments
Recall		The result shows that ....
Recognition		

INTROSPECTIVE REPORT:

The subject is required to write the introspective report stating briefly but clearly his/her experience during the whole process of experimentation. At the end of the report the subject must put his/her full signature and date. (It is compulsory to make the subject write introspective report even during the final examination).

DISCUSSION AND GRAPHICAL REPRESENTATION:

People are better at recognising things they have previously experienced than they are at recalling things from memory. Recognition is triggered by context while recall works without context. So, recognition memory is much easier to access than recall memory. While recognised memory is obtained through exposure of stimuli but recall memory is obtained through learning. Since learning

is acquisitioned through knowledge so it is seen that some extraneous factors may interfere in recall but in recognition there is less chance of interference of such factors.

For pictorial representation of the findings of the study so that the result can be more easily understood and interpreted bar graph with proper labelling was used. In the graph x-axis represented mode of retention, (two bars one denoting recall and another denoting recognition) and y-axis represented percentage (%) of correct words was drawn.

In regard to educational implication it can be said that the result implies that simple rote learning may not result in efficient memorization. Rather presenting concept within the context of familiar matter may elicit better memorization. Learning involving recognition therefore has the potential of initiating long term memory of concepts. More points can be added.

INSTRUCTION PERTAINING TO
STATISTICS PRACTICAL (PAPER-VIII GROUP-B)

As per the Syllabus of Education Honours Course (under 1+1+1, New /09 Regulations)

[*Notification No. CSR/91/10 dated 30th June 2010]*

- *For Statistics Practical Laboratory Note book students are required to collect data from their college or school or neighborhood. The size of the* ***sample*** *should be* ***minimum 50. Bivariate or paired data must be used.***
- ***One set of data may be collected and used by one individual student or may be collected by and shared amongst members of a small group (not exceeding 3 members per group)***

Title

Objectives:

The present study attempts to analyze the scores obtained by students of class ___/ ____year in achievement tests in two subjects /examinations / papers etc with the following objectives:

1. Studying the characteristics of distributions of scores in _____ and _____
2. Comparing the achievement of students in the two subjects/examinations / papers etc.
3. Finding out the association between the two subjects/examinations / papers etc.

Collection of data:

For the purpose of the study, secondary data, collected from XXXXXXX school/College have been used. The data consist of marks of each of the students of Class ____ in the _____Examination(s) in two subjects/ in two examinations / in two paper: _____ and _____. Full Marks in the subjects/examinations / papers are _____.

Sample:

The sample comprises _____ students of class ___/ ____year of Academic session_____. The composition of the sample is as follows:

Table 1: Description of the Sample

Class /Year/Section	Male	Female	Total

The Data:

The study deals with bi-variate data. The raw data are shown in the following table

Table 2: Raw data

Serial No.	Marks in (variable 1)	Marks in (variable 2)
1	X_1	Y_1
2	.	
3	.	
.	.	
.	.	
50	X_{50}	Y_{50}
.		

Method:

1.1 TABULATION OF DATA

For studying the nature and shape of the distribution of scores in the two subjects/examinations/ Papers, **the collected data have been organized and summarized into the following frequency distributions:**

A. SUBJECT /EXAMINATION / PAPER **X:**

Highest Score:
Lowest Score:
Range=
Class width (i) = *

Table 3: Frequency Distributions showing marks in _____

SCORES	Tally Mark	Frequency
		N =

B. SUBJECT/ EXAMINATION/PAPER Y:

Highest Score:
Lowest Score:
Range=
Class width (i) = *

Table 4: Frequency Distributions showing marks in _____

SCORES	Tally	Frequency
		N =

***[*Note: Class width should be so selected that around ten class intervals are obtained*]**

1.2 GRAPHICAL REPRESENTATION OF DATA THROUGH FREQUENCY POLYGON

To study the shape of the distributions of scores in _____ and _____ the two distributions have been graphically represented through Frequency Polygons.

Figure 1: Frequency Polygon showing the frequency distribution of scores in _____

Figure 2: Frequency Polygon showing the frequency distribution of scores in _____

[*Note: Frequency Polygons are to be drawn in graph paper, following 75% rule, appropriately labeled with scales mentioned in terms of mm/small squares. Frequency distribution showing class boundaries/ midpoints required for drawing frequency polygon may be added. If such tables are added the table No.s are to be altered accordingly***]**

1.3 CALCULATION OF MEASURES OF CENTRAL TENDENCY AND STANDARD DEVIATION

To study the characteristics of the distributions of scores in _____ and _____ on the basis of Central Tendency and Variability, Mean, Median, Mode and Standard Deviation of the two distributions have been calculated.

A. CALCULATION OF MEASURES OF CENTRAL TENDENCY AND S.D. FOR _____ :

Table 5: Table for calculation of measures of central tendency and SD for __(X)_____

	Subject/ Examination / Paper X				
SCORES	**f**	**x'**	**fx'**	**fx'^2**	**Cf**

Measures of Central Tendency for (X):

(i) Mean (M) = AM +$\sum$ fx'/N x i **where,**

(ii) Median (Mdn) = $L + \frac{N/2 - F}{f_m} \times i$

Note: Terms used in the formulae are to be defined

(iii) Mode (M_o) = 3 Mdn – 2 M

Standard Deviation:

SD = $i\sqrt{\sum fx'^2/N - (\sum fx'/N)^2}$

B. CALCULATION OF MEASURES OF CENTRAL TENDENCY AND S.D. FOR _____:

Table 6: Table for calculation of measures of central tendency and SD for (Y)……

	Subject/Examination / Paper Y				
SCORES	f_1	x'	f_1x'	$f_1x'^2$	**Cum f**

Measures of Central Tendency for (Y):

(i) Mean =
(ii) Median =
(iii) Mode =

Standard Deviation:

SD =

(Note: Working out of the sums including the formulae and terms used should be shown)

1.4 GRAPHICAL REPRESENTATION OF DATA THROUGH CUMULATIVE FREQUENCY CURVE AND LOCATION OF MEDIAN AND QUARTILES TO STUDY THE NATURE OF THE DISTRIBUTION

Table 7: Table for drawing Cumulative frequency graph for (X)

SCORES	f_x	Cf

Figure 3: Cumulative frequency graph for (X)

Graphically determined values for _(X)____:

First Quartile (Q_1) =
Third Quartile (Q_3) =
Median or Second Quartile (Q_2) =

Table 8 : Table for drawing Cumulative frequency graph for (Y)

SCORES	f_y	Cum f

Figure 4: Cumulative frequency graph for Y

Graphically determined values for _(Y)_____

First Quartile (Q_1) =
Third Quartile (Q_3) =
Median or Second Quartile (Q_2) =

[*Note: Cumulative frequency graphs are to be drawn in graph paper, following 75% rule, appropriately labeled with scales mentioned in terms of mm/small squares.*]

2. GRAPHICAL REPRESENTATION OF THE MEASURES OF CENTRAL TENDENCY AND S.D. THROUGH BAR-CHART FOR COMPARISON OF PERFORMANCE IN _____ AND _____

Table 9: Table showing the value of Measures of Central Tendency and SD Of _____ and _____

	Subject/ Exam /**Paper** X	Subject/Exam /**Paper** Y
Mean		
Median		
Mode		
Standard Deviation		

Figure 5: Bar-chart showing the Measures of Central Tendency and SD of Mathematics and History

[Note: Vertical Multiple Bar graph to be drawn showing the values of two Means, Medians, Modes and S.D.s with appropriate labels; scale in Y axis to be mentioned in terms of mm/small squares]

3. DETERMINATION OF THE TYPE OF ASSOCIATION BETWEEN THE SCORES IN_____ AND _____ BY DRAWING SCATTER DIAGRAM

Figure 6: Scatter Diagram showing the Scores in _(X)_____ and __(Y)_____

Observations:

- Identifying the Modal Class from the frequency distributions: e.g. From the frequency distributions it can be observed that the modal class for (X)_____ is ___ and that for ____(Y)___ is _____.
- Observation about the shape (symmetrical/ asymmetrical) from the frequency polygons
- Stating the values of Mean, Median and Mode of the two distributions
- Observing whether Mean < Median < Mode or Mean > Median >Mode or Mean=Median=Mode for each of the distributions (Intra-group comparison)
- Observation regarding the comparative (calculated) values of Mean, Median and Mode of the two distributions (inter-group comparison)
- Stating the values of SD of the two distributions and comparing the values
- Stating graphically determined values of 1st and 3rd Quartile and Median for the two distributions
- Observation about the comparative values of the measures of central tendency and SD from bar chart/ graph
- Stating the number of points observed in the scatter diagram. Identifying whether or not the scatter diagram exhibits any diagonal linear pattern, if so the direction of the linear path.

Interpretation

1. Nature and characteristics of the distribution of scores:

A. Distribution for Scores in (X)_____**:**

- ***Description on the basis of shape of the distribution*** (from frequency polygon)*: Students are to comment on the shape of the distribution (Symmetrical or asymmetrical) and find out where the scores tend to accumulate (at the higher/lower end or at the middle) and what it indicates*
- ***Description on the basis of central tendency and variability:***

Nature of Central tendency

- Mean – average performance
- Median – the middle most point of the distribution
- Mode – the point of highest concentration

Nature of Variability

Standard Deviation – how much the scores deviate on an average from the mean

- ***Graphically determined Quartile values*** – identifying the score below which fall one-fourth (Q_1) , half (Q_2) and three-fourth (Q_3) of the distribution

B. Distribution for Scores in (Y)_____: [Same as X]

2. Comparison between the two distributions:

- **Shape of the distributions –** how the shapes of frequency polygons differ or whether they are identical.
- **Comparison on the basis of average performance (the Mean score)**
- **Comparison on the basis of Variability with the help of S.D (identifying the distribution in which the scores are more scattered)**

3. Association between the two sets of data

- Identifying whether the diagonal linear pattern as stated in the observation reflects positive or negative association/relation
- If no such pattern is observed identifying that as no/zero association
- Describing the relation between the two variables on the basis of the type of association identified