[LD 0212] **AUGUST 2013** **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain in details of the Importance and Scope of Statistics.
2. Calculate the Mean Median and Mode for the following data:

Age (in years)	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Persons	20	25	32	40	42	35	10	8

3. Explain in details the method of sampling procedures.

II. Write notes on: **(8 x 5 = 40)**

1. Explain Origin and Scope of Statistics
2. Define Scale measurements of statistical data.
3. Define: (i) Probability. (ii) Sample Space. (iii). Mutually exclusive events.
4. Procedure and Assumptions of testing hypothesis.
5. Define Ethics of research in behavioural sciences.
6. Define Correlation and Regression.
7. Definition of Standard deviation and Standard errors.
8. Define the Parametric and Non Parametric Methods

III. Short Answers on: **(10 x 3 = 30)**

1. What is coefficient of Variation?
2. Define Small and Large samples
3. Define Normal Curve
4. What is Hypothesis?
5. What is Primary and Secondary data?
6. Advantages Parametric test
7. Disadvantage of Non parametric test
8. What is Type I and Type II Errors
9. Define Rank Correlation
10. What is Research?

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[LE 0212] **FEBRUARY 2014** **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Describe the different measures of central tendency and compare their merits.
2. Discuss the various research designs used in Audiology and Speech Language Pathology Studies.
3. Calculate the product moment correlation coefficient between age and hearing levels (average of three frequencies) and interpret.

Age (year)	30	40	50	60	70
Hearing level (dB)	25	35	40	45	55

II. Write notes on: **(8 x 5 = 40)**

1. Discuss application of statistics to speech and hearing.
2. Bring out the various scales of measurement.
3. It is known that 10% of children in a town have learning problems. If a sample of two children is taken, calculate the probability that (a) both have learning problem. (b) none have learning problem (c) one has and one does not have the problem.
4. State the properties of Normal Distribution.
5. When will you use t test of significance?
6. The ages of 10 children with sensory-neural hearing loss are given below. Determine the median and mode.
   7, 8, 6, 5, 9, 5, 10, 12, 9, 13
7. Write briefly on methods of data collection.
8. What does the linear regression coefficient denote? Illustrate with an example.

III. Short Answers on: **(10 x 3 = 30)**

1. What are the two meanings of Statistics?
2. How will you draw Frequency Curve?
3. Define Probability.
4. How is the Null Hypothesis stated?
5. Mention the Types of variables.
6. When will you use bar diagram?
7. Define Type I error.
8. What is behavioural measure?
9. Define Average Deviation.
10. What is Skewness?

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[LF 0215] **AUGUST 2014** **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Bring out the need for measure of central tendency & compare the different measures.
2. Discuss the parameters for scientific research in Audiology and Speech Language Pathology Studies.
3. Calculate rank correlation coefficient between scores in audiology and in speech pathology of 10 candidates.

Audiology Score	33	46	58	66	72	85	28	42	55	64
Speech Pathology Score	25	38	47	57	55	77	43	55	67	73

II. Write notes on: **(8 x 5 = 40)**

1. Bring out difference between descriptive statistics and inferential statistics.
2. What are the various scales of measurement?
3. It is known that 20% of the elderly in a town are hard of hearing. If a sample of two elderly persons is taken, calculate the probability that
   (a) both are hard of hearing,
   (b) one is hard of hearing and the other is not and
   (c) none is hard of hearing.
4. Explain the meanings of Type I and Type II errors.
5. Write about measurement procedure in Speech Pathology.
6. What are the different types of hypothesis?
7. Briefly write about any two research designs.
8. Bring out the components of research article.

III. Short Answers on: **(10 x 3 = 30)**

1. Define Statistics.
2. How will you choose class interval?
3. Define Probability.
4. How is the Null Hypothesis stated?
5. Mention the Types of variables.
6. Define Standard Deviation.
7. What is Skewness?
8. How will you interpret correlation coefficient?
9. What does standard error indicate?
10. What is behavioural measure?

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[LG 0215] **FEBRUARY 2015** **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Describe the various measures of central tendency and compare their merits.
2. Discuss the steps used in research methods in Audiology and Speech Language Pathology Studies.
3. Use the following data to find out if exposure to infectious disease is associated with developing hearing loss. (5% level of $\chi 2$ distribution with 1 degree of freedom = 3.84)

	Had hearing loss	Had no hearing loss
Exposed to infectious disease	30	20
Not exposed to infectious disease	10	40

II. Write notes on: **(8 x 5 = 40)**

1. Mention application of statistics to speech and hearing.
2. What are the types of variable?
3. State the properties of Normal Distribution.
4. When will you use F test of significance?
5. Briefly state the need for scientific enquiry.
6. What are the ways of stating research topic?
7. Write briefly on two methods of data collection.
8. Distinguish between type I error and type II error.

III. Short Answers on: **(10 x 3 = 30)**

1. Define Statistics.
2. Write an example of discrete measurement.
3. Which diagram will help in calculating median and quartiles?
4. Define Probability.
5. Define Sample.
6. Give an example of Null Hypothesis.
7. How will you interpret correlation coefficient?
8. When will you use bar diagram?
9. What is behavioural measure?
10. When is Ex post-facto design used?

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[LH 0815] **AUGUST 2015** **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain in detail the documentation of research.
2. Discuss the role Descriptive and Inferential statistics in Speech and hearing research.
3. Find mean and SD for the following 1000 children with birth weight

Birth weight	1000-1500	1500-2000	2000-2500	3000-3500	3500-3500	3500-4000
F	15	55	280	450	150	50

II. Write notes on: **(8 x 5 = 40)**

1. Types of data.
2. Frequency Distribution.
3. Normal Distribution.
4. Type I and Type II error, Standard error.
5. Rank correlation for repeated and not repeated ranks.
6. Types of Hypothesis.
7. Behavioural measures and recording procedures.
8. Probability sampling methods.

III. Short Answers on: **(10 x 3 = 30)**

1. Scales of measurement.
2. Emperical relationship of mean, median and mode.
3. Range and its coefficient.
4. Skewness and Kutosis.
5. Addition law of probability.
6. Experimental design.
7. Snowball sampling.
8. Quality of scientific clinician.
9. Product moment correlation.
10. Reference Style in an article.

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[LI 0216] **FEBRUARY 2016** **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain in detail the research methods and designs needed for clinical population and Community research**.**
2. Discuss on general properties of normal distribution and area under the curve with examples.
3. Calculate mean, median, mode for diastolic BP in males aged 25-34 given below:

B.P	**70-75**	**75-80**	**80-85**	**85-90**	**90-95**	**95-100**
No. of males	**6**	**18**	**46**	**17**	**6**	**2**

II. Write Notes on: **(8 x 5 = 40)**

1. Scales of Measurement.
2. Collection of Data.
3. Types of Correlation.
4. Formulation of hypothesis.
5. Classification of data.
6. Limitations of Statistics.
7. Sampling Techniques.
8. Ethics in Research.

III. Short Answers on: **(10 x 3 = 30)**

1. Descriptive Statistics.
2. Datum, Class interval, Class frequency, class width.
3. Rank correlation.
4. Standard error.
5. Coefficient of variation.
6. Components of Research article.
7. Types of Variables.
8. Population and sample, Sampling frame.
9. Parameter and Statistic.
10. Statement of a research question.

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[LJ 0816] AUGUST 2016 **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY
SECOND YEAR
PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Discuss the various method of collecting data.
2. Explain the concept of variability and its different types of measurements.
3. Explain in detail about the need of skewness and its types.

II. Write notes on: **(8 x 5 = 40)**

1. Differentiate between descriptive statistics and Inferential Statistics.
2. Discuss the advantages and disadvantages of using secondary data.
3. Explain the need of graphs in representation of data.
4. Why it is necessary to have different types of central tendency? Justify.
5. Discuss about the need of probability and its related concepts.
6. Explain the concept of skewness and its types.
7. Discuss the test procedure for '***t***' test.
8. Calculate the arithmetic mean for the following data.

X:	0-7	7-14	14-21	21-28	28-35	35-42	42-49
F:	6	15	25	41	36	18	10

III. Short answers on: **(10 x 3 = 30)**

1. How statistics is used in today's medical field?
2. What are the measures of descriptive statistics?
3. State the importance of data.
4. Define Range and coefficient of range.
5. State the advantages of diagrams in medical sciences.
6. Define Kurtosis.
7. Define Conditional Probability.
8. Mention different non-parametric tests that are used in health statistics.
9. Define correlation with an example.
10. State the situation to use '***F***' test in health science analysis.

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[LK 0217] FEBRUARY 2017 **Sub. Code: 2317**

B.Sc. AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain the importance of statistics with applications to speech and hearing.
2. Discuss about the measures of central tendency.
3. Explain about correlation and its types in detail.

II. Write notes on: **(8 x 5 = 40)**

1. Discuss about descriptive statistics.
2. Explain about the classification of data.
3. State the importance of diagrams in representation of statistical data.
4. State the properties of normal distribution.
5. Explain about the theory of probability.
6. Discuss about the concept of kurtosis.
7. Explain about type I and type II errors.
8. Explain the procedure for F - test.

III. Short answers on: **(10 x 3 = 30)**

1. Define Statistics.
2. State the applications of statistics in health sciences.
3. Define the normal, ordinal scale of measurements.
4. What do you mean by primary data?
5. Define Dispersion.
6. Define Skewness.
7. What do mean by Non-Parametric statistics?
8. Define about correlation coefficient.
9. State the situation to use Rank Correlation.
10. What do you understand by level of significance?

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[LM 0218] FEBRUARY 2018 **Sub. Code: 2317**

BACHELOR IN AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY
SECOND YEAR
PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Define the probability and non-probability sample techniques.
2. Write in detail about Ex-post facto research design with example.
3. A study was performed comparing the bone formation of individuals undergoing a new therapy and conventional therapy. Test whether the bone formation rate is different among the two groups at 5% level of significance? (t_{val}(30df)=2.04)

	Conventional therapy (n=16) mean±sd	New therapy (n=16) mean±sd
Bone-formation rate	33±16	95±32

sd = standard deviation

II. Write notes on: **(8 x 5 = 40)**

1. Measurement scale.
2. Explain secondary data with example.
3. Find the mean, median and mode of the following data
   24, 28, 20, 28, 36, 37, 36, 50, 80, 28
4. Correlation and its types.
5. Advantage and disadvantage of non-parametric test.
6. Explain the concept of standard error.
7. Concept of behavioural measures with example.
8. Normal distribution and its properties.

III. Short answers on: **(10 x 3 = 30)**

1. Definition of statistics.
2. Define mean, median and mode.
3. Null and alternative hypothesis.
4. Uses of F-test.
5. Conditional probability.
6. One-sided test with example.
7. How to construct a scatterplot with example?
8. Define z-score.
9. Formulation of hypothesis.
10. Advantage and disadvantages of sampling.

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BACHELOR IN AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY
SECOND YEAR
PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Role of statistics in the field of audiology and speech language pathology.
2. Elaborate on experimental research design with example.
3. A study of comparing the impact of hearing loss in the life of adults who had congenital hearing loss with that of adults with acquired adult onset hearing loss was conducted. Find whether there is any association between gender of the patient and the hearing loss type at 5% level of significance (χ^2(1df)=3.84)

	Congenital hearing loss	Acquired adult onset hearing loss
Male	70	30
Female	60	40

II. Write notes on: **(8 x 5 = 40)**

1. Define population, sample and sampling frame with example.
2. Procedure of paired-t-test.
3. Type I and Type II error.
4. Define mean, median and mode.
5. Use of graphical representations.
6. Construct a continuous frequency distribution with an interval of 10 for the following data.

31	13	46	31	30	45	38	42	30	9	30	30
46	36	2	41	44	18	29	63	44	30	19	5
44	15	7	25	12	30	6	22	24	37	15	6
39	32	21	20	42	31	19	14	23	28	17	53
22	21										

7. Ethics of research in behavioural sciences.
8. Explain stratified sampling technique and give an example.

III. Short answers on: **(10 x 3 = 30)**

1. Standard deviation and variance.
2. Marginal probability.
3. Compute CV of the data given: 4, 8, 2, 8, 6, 7, 3, 5, 8, 10.
4. Mention non-parametric test alternative to independent t-test and paired t-test.
5. Define correlation with example.
6. What is spearman's rank correlation?
7. What are large sample tests?
8. Define non-probability sampling with example.
9. Define hypothesis and its types.
10. Statement of research problem.

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[LO 0219] FEBRUARY 2019 **Sub. Code: 2317**

BACHELOR IN AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY

SECOND YEAR

PAPER VII – BASIC STATISTICS AND SCIENTIFIC ENQUIRY IN AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

Q.P. Code: 802317

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain the importance of statistics with applications to speech and hearing.
2. Bring out the Characteristics of Normal Distribution.
3. Use the following data to find out if exposure to infectious disease is associated with developing hearing loss. (5% level of $\chi 2$ distribution with 1 degree of freedom = 3.84)

	Had hearing loss	Had no hearing loss
Exposed to infectious disease	30	20
Not exposed to infectious disease	10	40

II. Write notes on: **(8 x 5 = 40)**

1. Distinguish between Bar diagram and Histogram.
2. State Addition and multiplication theorems of probability.
3. In series of Boys, the mean systolic blood pressure was 120 and standard deviation was 10. In the same series mean height and standard deviation were 160 cm and 5 cm respectively. Find which character shows greater variation?
4. Importance of Reliability and Validity in Research Process.
5. Coefficient of variation.
6. What are the ways of stating research topic?
7. Write about study designs in research methods.
8. Ethics in Research.

III. Short answers on: **(10 x 3 = 30)**

1. Mention application of statistics to speech and hearing.
2. Briefly state the need for scientific enquiry.
3. Prevalence and Incidence.
4. Components of Research article.
5. Nominal and ordinal data.
6. Define z-score.
7. What is Skewness?
8. Define Rank Correlation.
9. Define Normal Curve.
10. Reference Style in an article.

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