*AA*OIO/LA 010

I Semester M.Sc. Examination, December 2005
Speech Language Pathology & Audiology
Research Methods in Speech Language and Hearing

Time: 3 Hours Max. Marks: 80

Note: *Answer ALL the questions following instructions given.*

I. 1. a) Describe ex-post facto research and experimental research with examples. 10

b) Define hypothesis. Explain the importance of hypothesis with suitable examples. 6

OR

2. Discuss design of sample survey research with examples from speech, language and hearing and explain how this strategy has been employed in studies on prevalence of hearing loss in the community with at least two Indian studies. 16

II. 3. a) Discuss mixed design with examples. 6

b) Compare and contrast research designs of experimental and non-experimental studies in the area of voice disorders. 10

OR

4. a) Discuss process evaluation with examples from speech, language and hearing. 8

b) Compare and contrast single subject and group designs. 8

III. 5. Describe any two studies in Audiology that have used AB research design and critically evaluate the studies. 16

OR

6, Critically evaluate research designs employed in aphasia research in spontaneous recovery. 16

P.T.O.

IV. 7. a) Outline the application of learning theory principles between 1950 and 1970 in understanding language acquisition. 8

b) Discuss the research methods used in audiology in the period 1936-40. 8

OR

8. a) Highlight research with major developments and inventions in -audiology between 1950 and 1970. 8

b) Discuss research methods used in speech pathology in the period . 1936-40. 8

V. 9. a) What are the methods of research used in genetics ? 10

b) "Epidemiological research in speech and hearing in India has not taken off at all" - Discuss. 6

OR

10. a) Write an essay on the objects and scope of epidemiological research in communication disorders. 8

b) Discuss how research designs of physical sciences have been incorporated in the area of behavioral sciences with particular reference to voice physiology. 8

A A 020/L A 020

I Semester M.Sc. Examination, December 2005
Audiology & Speech Language Pathology
Statistics in Speech - Language and Hearing

Time: 3 Hours Max. Marks: 80

Instruction: *ALL units are COMPULSORY.*

I.1. a) What do you mean by probability ? Explain briefly the laws of probability with specific examples. 10

b) Briefly explain the applications of measures of central tendency and variability. 6

OR

2. a) Describe the importance Of statistical inference to speech-language pathology and audiology with necessary illustrations. 10

b) Describe various types of hypotheses with suitable examples. *6*

II 3. a) Differentiate between ANOVA and ANCOVA. 6

b) Calculate regression coefficient for the data given below and obtain regression equations. 10

Subjects	A	B	C	D	E	F	G	H
Height	170	172	168	153	162	181	179	167
Weight	62	69	59	57	55	70	69	63

OR

4. a) Explain the assumptions underlying ANOVA. 6

b) Calculate 'F' value for the data given below and indicate whether groups differ significantly in their scores on a test. 10

Scores

Group A	0	1	2	1	2	0
Group B	5	7	6	5	6	5
Group C	12	10	12	11	10	11

P.T.O.

III. 5. a) Describe the conditions leading to application of parametric and non-parametric statistics. 8

b) Apply the 'THE RUNS TEST' and see whether 2 groups differ significantly. 8

Male	29	29	25 .	25	25	24	23	23	21	18	18	17
Female	32	31	30	30	27	26	26	22	22	20	20	19

6. a) Describe the term 'non-normal distribution' and factors leading to non-normal distribution. 8

b) Apply 'Man-Whitney U test' for the data given below and see whether 2 groups differ significantly. ' 8

Boys	25	24	23	22	14	10	10	10	9	4	2	2
Girls	35	34	32	31	30	30	29	26	21	15	9	8

IV. 7. a) Describe the different measures of association employed in analysis of qualitative data. 8

b) Calculate contingency coefficient value for the data given and comment on its significance. 8

Gender

Response	Boys	Girls
Yes	42	71
No	58	29

OR

8. a) Describe various types of log-linear models with suitable examples. 10

b) Give a detailed account on 'Kappa Coefficient'. 6

V. 9. a) Describe the terms 'logistic regression' and 'multidimensional scaling'. 8

b) Explain briefly the steps involved in MANOVA. 8

OR

10. a) Explain the need for multivariate analysis in speech-language and hearing with necessary illustrations. 8

b) Explain briefly the steps involved in 'Discriminant function analysis'. 8

AA 030/LA 030

I Semester M.Sc. Examination, December 2005
Audiology/Speech Language Pathology
Technology for Speech Language and Hearing

Time: 3 Hours Max. Marks: 80

Instruction: *Answer ALL questions,*

I, 1. a) Explain with a neat diagram, how an inverter is different from an UPS system. , 8

b) Convert the following hexadecimal numbers to binary and then to decimal numbers. 4

. i) 2 A

ii) 78

c) Write a note on the different types of semiconductor devices used in a computer. . *4*

OR

2. a) How do you use a Flip-Flop as a memory device ? Explain with a neat diagram. 6

b) Illustrate and describe the layout of a LAN. 6

c) Write short notes on: *4*

.i) FET ii) LCD

II 3. a) Bring out with the help of neat diagrams, the differences between analog and digital signals, what is the necessity for converting analog signals to digital forms for analysis. Describe with examples from Speech Pathology. 10

b) What is digital and analog filtering ? What are the applications of digital filtering in hearing aids ? 6

OR

4. a) What are the qualities of FIR filters which make them a better choice in speech processing applications ? 6

b) Explain the working of a FM system (both transmitter and receiver) and illustrate how this technology is made use of in FM hearing aids. 10

P.T.O.

HI. 5. a) Explain, with the help of a neat diagram, how a filtered click is generated. 6

b) Explain how signal averaging will improve the S/N ratio. Draw supporting diagrams. 10

. a) Describe the differences between a tone pip and tone burst ? 4

b) Explain briefly the different types of electrode montages. 4

c) Define differential amplification. Can it be employed as a technique for reducing noise ? If yes, how is it achieved ? Explain with a diagram. 8

IV.7.a)Define: 4

i) Attack time

ii) SSPLg

iii) Compression threshold, and

iv) Compression ratio

b) Illustrate the difference between input and output compression. 6

c) Explain the LDC of speech with a supporting diagram. 6

OR

8. a) Discuss the different types of pattern recognition techniques i used in speech recognition systems. 10

b) With a supporting block diagram, explain the differences between i a digital hearing aid and a digitally programmable hearing aid. 6

V. 9. a) Explain, with'the help of a neat diagram, the working of an EEG system. 8

b) What is Doppler effect ? How is it applied in blood flow studies ? 8

OR

10. a) Describe and compare the different techniques of radio imaging. 8

b) What factors make MRS the most effective imaging technique ? 4

c) How do you alternate low frequency noise in a sound treated room ? 4

AA040

I Semester M.Sc, Examination, December 2005
Audiology & Speech Language Pathology .
Auditory Physiology

Time: 3 Hours Max. Marks: 80

Instruction: *Answer ALL questions.*

I, 1. a) What's the relevance of temporal bone anatomy in the physiology of hearing ? (06)

b) Discuss Ear canal transfer function, resonance and head shadow. (10)
OR

2. a) Discuss the factors of Interaural time difference, Interaural Intensity difference and spectral cues in localisation of sounds. (10)

b) Trace the embryology of the external ear. (06)

11.3. a) Compare acoustic and non-acoustic reflexes. (08)

b) Explian the principle of acoustic reflexes and their clinical implications, (08)

OR

4. a) Discuss the recent studies on the structure and function of Tympanic Membrane. Add a note on the type and site of TM perforation and its relation to the magnitude of hearing impairment. (10)

b) Differentiate tqsts of patency vs function of eustachian tube. Add a note on autophony. (6)

III. 5. a) Discuss the mechanical transduction in outer hair cells. Add a note on neurolransmitter. (08)

b) Compare the historical from current status of basilar membrane mechanics. (08)

OR

6. a) Discuss the dynamics of cochlear fluids. (08)

b) Explain the blood supply and innervation to cochlea. (08)

PTO

IV. 7. a) Discuss the recent developments in the physiology of efferent auditory pathway. (08)

b) Describe cochlear potentials in terms of generation, recording, properties and clinical relevance. (08)

OR

8. a) Explain, in brief OAE. Summarize the studies on the measurement of efferent effects of OAE. (08)

b) Explain the tonotopic organisations of cochlea e appropriate illustrations. (08)

V. 9. a) Discuss the relevance of hearing theories with respect to the recent knowledge. (10)

b) Explain the physiology of the vestibular system. (6)

OR

10. a) Trace the changing concepts of hearing theories. (10)

b) Describe the physiology of the vestibular perye. (06)

AA 050

I Semester IVLSc. Examination, December 2005
Audiology and Speech Language Pathology
Basics in Auditory Perception

3 Hours Max. Marks: 80

Instruction: *Answer FIVE questions, ONE from EACH Unit,*

a) What is the "Signal Detection Theory" ? ,4

b) Critically evaluate the above theory. 12

OR

2. a) Compare and contrast the PEST procedure and the BUDTIF procedure. 8

b) What are the advantages and disadvantages of each of the above ? 8

II. 3. a) Define Steven's law. 4

b) Write notes on how temporal integration affects loudness perception. 12

OR

4. a) Write a note on equal loudness contours. 6

b) What is the application of equal loudness contours in audiology ? 10

III. 5. a) Discuss the effect of intensity on pitch perception. 6

b) Describe combination tones, mentioning their applications. 10

OR

6. Write short notes on:

i) Relation between pitch and frequency. 4

ii) Effect of duration on pitch. 4

iii) Beats and harmonies. 4

iv) Missing fundamental. 4

P.T.O.

IV. 7. Temporal perception involves several aspects. Discuss these with research . evidence. 16

OR

8. a) How does auditory system perceive temporal information ? 8

b) What is the application of temporal integration in audiology ? 8

V. 9. How is localization different from lateralization? Discuss the cues used for localization. 16

OR

10. Write notes on the following highlighting their utility is audiology.

a) Figure - ground phenomenon. 8

b) Auditory streaming. 8
