

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

AA 010/LA 010

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

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 |

- 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

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) 2A
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

AA030/LA030

- 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
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I Semester M.Sc. Examination, December 2005
Speech-Language Pathology and Audiology
Neurobiology of Speech and Language

Time: 3 Hours

Max. Marks: 80

Instruction: Answer ALL questions.

1. 1. a) Describe any two current theories of language representation in the brain. 10
b) What is the role of trigeminal, vagus, glossopharyngeal and hypoglossal nerves in speech function. 6
OR
2. a) Describe the role of cortical and subcortical connections in language mediation. 8
b) Elaborate on the role of cerebral dominance and plasticity in adult language disorders. 8
- II. 3. a) What are the processes involved in short and long term memory and their influence on language acquisition. 10
b) Describe the importance of attention in language acquisition. 6
OR
4. a) What is the role of memory in language acquisition and discuss the implications for language disorders. 12
b) Describe any one theory of attention deficit disorder. 4
- III, 5. a) Elaborate on any two metabolic techniques used to study brain physiology. 8
b) Discuss the suitability of ERP technique in neurolinguistic research. 8
OR
6. a) Compare and contrast invasive and non-invasive procedures to study brain. 8
b) Discuss the importance of CNV and MNN issues in studying brain functions. 8

LA 040

- IV. 7. a) Describe the various types of cells in the central nervous system. 8
b) Are damaged nerves able to regenerate in CNS ? Give research evidence in support of your views. 8.

OR

8. a) Describe the influence of any one excitatory and any one inhibitory neurotransmitters on speech and language mediation. 8
b) Describe any one speech disorder that is related to neurotransmitter dysfunction. 8

- V. 9. a) How does aging influence brain structures ? 8
b) Compare and contrast normal and pathological aging, 8

OR

10. a) Describe the effect of central nervous system on speech and language functions as a result of aging sets in. 10
b) Do peripheral speech mechanism functions get affected due to aging? Discuss. 6
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I Semester M.Sc. Examination, December 2005
Speech - Language Pathology & Audiology
Clinical Linguistics and Multilingual Issues in Communication

Time: 3 Hours

Max. Marks: 80

Instruction: *Answer ALL the questions.*

Unit I

1. "Clinical linguistics is defined as application of principles and findings of linguistics to a clinical situation". Elaborate. 16

OR

2. "Study of linguistics is essential for a speech - language pathologist to understand the normal aspects of speech and language." Discuss. 16

Unit II

3. a) How do you make phonemic analysis of a language ? 08
b) How would you apply your knowledge of phonemic analysis in a clinical situation ? 08

OR

4. a) Distinguish between morphology and syntax. 06
b) Write briefly on how children acquire morphology ? 10

Unit III

5. a) What is semantics ? 03
b) What are semantic fields ? 05
c) What is semantic disability and what are its types ? 08

OR

6. a) How does pragmatic ability differ from linguistic ability ? 08
b) Write briefly on acquisition of pragmatics. 08

Unit IV

7. "A competent speech-language pathologist is sensitive to sociolinguistic variations of language". Explain with illustrations. 16

OR

8. a) Write a brief note on dialects. 08
b) What are registers and Creoles ? 08

Unit V

9. a) Write a critical review of Sapir-Whorf hypothesis. 10
b) What is non-verbal communication ? 06

OR

10. "Knowledge of the cultural background of a client is a prerequisite for effective management of communication disorder". Elaborate. 16
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