**31901** MA-2600

Sl. No. 0065 Total No. of Pages : 2

# I Semester M.Sc. (AUD) Examination, June - 2022

## (Scheme : CBCS)

## RESEARCH METHODS AND STATISTICS IN SPEECH, LANGUAGE AND HEARING

**Time : 2 Hours** **Max. Marks : 50**

***Instruction :*** ***Answer all questions.***

**I.** 1. a) Explain the types of variables used in research? **[5]**

b) What are the differences b/w active and assigned variables? Explain with suitable examples. **[5]**

c) What is an extraneous variable & Explain how do you control it in a research study with hypothetical example? **[5]**

OR

2. Write a research proposal of Longitudinal design in the field of audiology/ Speech and Language Pathology. **[15]**

**II.** 3. Describe the steps involved in evidence based practice. **[10]**

OR

4. Explain various types of validity & reliability used in speech and hearing research. **[10]**

5. a) What do you mean by hypothesis testing? Use appropriate t-test to test the significance between two groups. **[7]**

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|---|---|---|---|---|---|---|
| Group 1 | 7 | 5 | 3 | 4 | 6 | 7 |
| Group 2 | 8 | 9 | 8 | 7 | 10 | 9 |

b) What is normal distribution of data & the general properties of normal distribution. **[3]**

OR

6. a) Write the assumptions of ANOVA. **[5]**

b) What is the need of post hoe tests? Explain with suitable examples. **[5]**

***P.T.O.***

IV. 7. a) What is friedman's test & when do you apply friedmen's test. [5]

b) What is a measure of agreement? Explain the procedure to calculate measure of agreement. [5]

c) Write a note on chi-square test. [5]

OR

8. a) Describe the applications of non-parametric test. [5]

b) What is kruskal-wallis test? And how do you perform it? [7]

c) What are the differences b/w association & correlation in statistics & research methods? [3]

**31902** **MA-2601**

Sl.No. 0065 **Total No. of Pages : 2**

# I Semester I Year M.Sc. Examination, June -2022

## (Scheme : CBCS)

## AUDIOLOGY

## Auditory Perception

**Time : 2 Hours** **Max. Marks : 50**

**Instruction : All questions are compulsory. Draw diagram wherever necessary.**

1. Explain the theory of signal detection and its application in the field of speech and hearing. **[10]**

OR

2. Explain the procedure of any two adaptive methods for threshold estimation. **[10]**

3. Write a note on the perception of loudness by individuals with normal hearing sensitivity. **[10]**

OR

4. What is pitch perception? how the perception of pure tones differ from that of the complex tone? **[10]**

5. Write short notes on.: **[3 × 5 = 15]**

   a. Critical band concept

   b. Psychoacoustic tuning curves

   c. Notch noise method

OR

6. Write short notes on : **[3 × 5 = 15]**

   a. Co-modulation masking release

   b. Forward masking

   c. Informational and energetic masking

*P.T.O.*

7. What are temporal processing abilities? Explain any one method to measure temporal resolution and temporal pattern perception abilities. **[15]**

OR

8. What are the factors which may affect temporal processing abilities? What will be the consequence of impaired temporal processing on auditory processing? **[15]**

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**31903** **MA-2602**

Sl.No. 0065

Total No. of Pages :2

# I Semester M.Sc. Examination, June - 2022

## (Scheme : CBCS)

## AUDIOLOGY

## Physiological Assessment of The Auditory System

**Time : 2 Hours** **Max. Marks : 50**

***Instruction : Answer all the questions.***

I. *Q1)* Explain the instrumentation used for immittance evaluation with a block diagram. **[10]**

OR

*Q2)* What are the different variables affecting multicomponent and multi frequency tympanometry? **[10]**

II. *Q3)* a) Describe the Acoustic Reflex patterns obtained in various pathologies. **[10]**

b) Brief about the non acoustic reflex pathway. **[5]**

OR

*Q4)* a) Explain acoustic reflex pathway with a neat illustration. **[10]**

b) Write a brief note on the implications of acoustic reflex decay test. **[5]**

III. *Q5)* a) Describe the classification of OAEs. **[10]**

b) Brief about the clinical applications of SOAE. **[5]**

OR

***P.T.O.***

*Q6)* a) Explain the instrumentation requirement for recording SOAEs. **[5]**

b) What are the factors affecting SOAEs? **[5]**

c) Write briefly about the suppression of SOAE. **[5]**

IV. *Q7)* Write an essay on the techniques and instrumentation used for the recording of various evoked OAEs. **[10]**

OR

*Q8)* What are the clinical applications of different evoked OAEs? **[10]**

**31904** **MA-2603**

Sl.No. **Total No. of Pages : 2**

# I Semester M.Sc. Examination, June - 2022
## (Scheme : CBCS)
## AUDIOLOGY
## Auditory Physiology

**Time : 2 Hours** **Max. Marks : 50**

***Instruction :*** ***Answer all questions.***

**I.** *Q1)* Describe the resonant properties of the external ear and their implications in auditory perception. **[15]**

OR

*Q2)* Describe the various modes of bone conduction hearing with supporting evidences. **[15]**

**II.** *Q3)* What is the need to understand auditory system in lower animals? Explain by comparing the human auditory system with that of animals. **[10]**

OR

*Q4)* a) Describe the structure of basilar membrane and its significance. **[5]**

b) Describe the efferent nerve innervation to the cochlea. **[5]**

***P.T.O.***

III. *Q5)* Describe the mechano-electrical transduction of cochlea. **[15]**

OR

*Q6)* Describe the various evidences found for presence of nonlinearity in cochlear function. **[15]**

IV. *Q7)* How does inner ear contribute in maintaining the balance of the body? Explain in detail. **[10]**

OR

*Q8)* Explain the structure of sensory end organs of balance and their functional significance. **[10]**

**31905** **MA-2604**

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# I Semester M.Sc. Examination, June - 2022
## (Scheme : CBCS)
## AUDIOLOGY
## Technology for Speech-Language and Hearing

**Time : 2 Hours** **Max. Marks : 50**

***Instruction :*** ***Answer all questions.***

**I.** ***Q1)*** a) What are the significant characteristics of a electret microphone? How does this microphone convert sound to electrical signal? **[5]**

b) With supporting diagrams, illustrate how a moving coil loud speaker converts electrical signal to sound. **[5]**

OR

***Q2)*** a) Differentiate low pass, high pass, band pass and band elimination filters on the basis of their frequency response curves. **[5]**

b) Why do you require uninterrupted power supply for diagnostic instruments? Explain how an uninterrupted power supply works. **[5]**

**II.** ***Q3)*** a) Differentiate between an analog signal and a digital signal. Explain the different stages involved in conversion of analog signal to a digital signal? **[5]**

b) Mention two methods used for decomposing a signal to simpler components in digital signal processing. Which of these methods is used for processing speech signal? Why? **[5]**

OR

***P.T.O.***

*Q4)* a) State and explain the tasks performed by the hard disk in the functioning of a computer. **[5]**

b) Explain the concept of world wide web. Illustrate with a diagram how a tele-rehabilitation system can be implemented through internet. **[5]**

III. *Q5)* a) Why is wide dynamic range compression required in hearing aids? Mention its side effects. **[5]**

b) How is noise cancellation implemented in hearing aids through dual microphone? Explain. **[5]**

c) How do you estimate the short time energy of a speech signal? Illustrate with appropriate diagrams. **[5]**

OR

*Q6)* a) Compare LPC analysis technique with cepstrum analysis. Highlight the merits and demerits of both. **[10]**

b) With a schematic diagram explain the technology used for speaker recognition. **[5]**

IV. *Q7)* a) Why do you require an artificial ear and artificial mastoid to measure the output from a headphone and a bone vibrator respectively? Explain how they are setup for this measurement. **[5]**

b) Explain the technology with which an electroglottograph tracks the area of contact of the vocal folds. [5]

c) Describe the principle of working of a multi channel ERP system. [5]

OR

*Q8)* a) How is a C-Arm different from a conventional X-ray machine? [5]

b) Explain the principle with which blood oxygen level dependent fMRI works. [5]

c) How does a CAT scanner work? Briefly explain the advantages of a CAT scanner over other scanning methods. [5]

31906 MA-2605

Sl.No. 0065 Total No. of Pages : 2

# I Semester M.Sc. (Audiology) Examination, June - 2022

## (Scheme : CBCS)

## SPEECH & HEARING

## Diseases of The Ear & Auditory Pathway

**Time : 2 Hours** **Max. Marks : 50**

**I.** 1) Explain the physiology of middle ear with a neat diagram. **[10]**

OR

2) Draw and explain the functioning of central Audiology Pathway. **[10]**

**II.** 3) Write short notes on **[3×5=15]**

a) Otosclerosis

b) Suppurative Otitis Media

c) Méniere's disease.

OR

4) Write short notes on **[3×5=15]**

a) NIHL

b) CP angle tumor.

c) Acoustic neuroma

*P.T.O.*

III. 5) Write a note on ototoxicity. [10]

OR

6) Explain the medico legal issues related to Audiology. [10]

IV. 7) Explain the surgical management of ear related problems. [15]

OR

8) What are the medical and surgical options available for vertibular disorders. [15]

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