



**STATE COMMITTEE OF EXAMINERS IN THE FITTING AND DISPENSING
OF HEARING INSTRUMENTS**

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PRACTICAL EXAMINATION STUDY GUIDE

Attention Supervisor and Temporary Training Permit Holder:

The State Committee of Examiners in the Fitting and Dispensing of Hearing Instruments has prepared the following study material to help you better prepare for your practical examination for licensure as a fitter and dispenser of hearing instruments. This practical examination study guide is subject to change. Please check the website for the current practical examination study guide.

IMPORTANT NOTICE:

1. Know your equipment before you are examined. Faulty equipment can cause you to fail your practical examination.
2. Lack of equipment, supplies, required certificates and required paperwork **will prevent** you from taking your practical examination.
3. All testing equipment including audiometers, sound level meters, etc., must be calibrated and a signed certificate of calibration, showing that the equipment has been calibrated within the last 12 months, must be with the equipment and brought with you to your practical examination.
4. Recently purchased sound level meters are not considered calibrated. A current signed calibration certificate is required.
5. **Calibration certificates must have the calibration value on the certificate.**
6. You will **need word lists** to record speech reception threshold (SRT) and speech discrimination scores to complete your practical examination. Please note that live voice cannot be used during **any portion** of the examination, as you will conduct all tests as if doing so, for example, in a nursing home (on site testing).
7. You must provide your own equipment for use during your practical examination.
8. Please review the Practical Examination Equipment Checklist on page 5.
9. You will have ninety (90) minutes to complete the audiometric portion of the practical examination including setup, and thirty (30) minutes for the ear impression portion of the examination.

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Sample of Audiogram.....	Separate pdf file

PRACTICAL EXAMINATION REQUIREMENTS

You will be required to provide the proper instructions for and perform the following tasks:

- a. Air Conduction (AC)
 - b. Bone Conduction (BC)
 - c. Speech Reception Threshold (SRT)
 - d. Most Comfortable Level (MCL)
 - e. Loudness Discomfort Level (LDL)
 - f. Speech Discrimination
 - g. Sound Field – SRT unaided and aided
 - h. Sound Field – Speech Discrimination
 - i. Masking Air, Bone and/or Speech (when indicated)
1. Demonstrate biologic audiometer performance verification (listening check).
 2. Demonstrate how to calibrate the audiometer's speech circuit for recorded speech testing utilizing the audiometer's VU meter.
 3. Verify and record ambient level of the testing environment appropriate for obtaining audiometric thresholds and know the state statutes regarding the maximum allowable level for testing.
 4. Demonstrate how to place the person to be tested (i.e.: back to examiner)
 5. Demonstrate otoscopy, utilizing proper sanitation and demonstrate proper bracing. The candidate will be required to state if they visualize the tympanic membrane.
 6. Demonstrate correct, proper and effective earphone/insert tip and bone oscillator sanitation and placement. The bone oscillator must not touch the pinna and there should be no hair trapped between the mastoid bone and the oscillator.
 7. Demonstrate the recommended frequencies and proper sequence to test for air conduction and bone conduction audiometry.
 8. Demonstrate the proper method for performing all air and bone conduction tests (i.e.: use of the ascending, descending and ascending-descending methods).
 9. Demonstrate the proper set up and calibrate the audiometer's sound field system (i.e.: speaker distance, placement and the use of a sound level meter to calibrate the speaker).
 10. Demonstrate and practice appropriate and effective hygiene and equipment sanitation at all times.
 11. Demonstrate how to calculate Pure Tone Average (PTA) and record in the appropriate place.
 12. Demonstrate how to utilize the PTA to begin the Speech Reception Threshold (SRT) test. The SRT test should have a beginning presentation level of 10-15dB above the air conduction PTA of the ear being treated.
 13. Demonstrate the proper type of words to perform SRT test.
 14. Know that the SRT level is determined by finding the lowest level where a patient can understand 50% of the Spondee words correctly.
 15. Demonstrate how to use the appropriate symbols for recording the various test results.
 16. Demonstrate how to appropriately determine masking levels and where to record them on the audiogram.
 17. Know and be able to explain how to determine the starting point or dB level for various audiometric tests, including the masking.
 18. Demonstrate the proper method for obtaining accurate Most Comfortable Levels (MCL) and Loudness Discomfort Levels (LDL).

PRACTICAL EXAMINATION SEQUENCE TO BE FOLLOWED

- 1) Equipment Set-Up and Pre-Test Procedures:
- 2) Otoscopy
- 3) Air Conduction Audiometry:
 - a) Pure Tones
 - i) Unmasked and also compute Pure Tone Average (PTA)
 - ii) Masked
- 4) Bone Conduction Audiometry
 - a) Unmasked
 - b) Masked
- 5) Speech Audiometry
 - a) Speech Reception Threshold (SRT)
 - i) Unmasked
 - ii) Masked
 - b) Most Comfortable Level
 - c) Loudness Discomfort Level
 - d) Speech Discrimination
 - i) Unmasked
 - ii) Masked
- 6) Sound Field Audiometry
 - a) Equipment Set Up & Calibration
 - b) Unaided
 - i) Speech Reception Threshold (SRT)
 - ii) Speech Discrimination
 - c) Aided
 - i) Speech Reception Threshold (SRT)
 - ii) Speech Discrimination
- 7) Earmold Impression
 - a) Make sure you have all of the necessary equipment and supplies required for this section of the test.
 - b) Procedure:
 - i) Cleanliness and sanitation
 - ii) Instructions to the patient/client
 - iii) Otoscopic ear inspection
 - iv) Ear canal block selection and placement
 - v) Otoscopic block placement verification
 - vi) Impression material preparation
 - vii) Insertion/Injection of ear impression material
 - viii) Removal of impression
 - ix) Post impression otoscopic ear inspection
 - x) Impression critique

PRACTICAL EXAMINATION EQUIPMENT CHECKLIST

- Audiometer (must have MANUAL setting) – **NO COMPUTER (P.C.) BASED AUDIOMETERS ALLOWED**
- **CURRENT** Signed Audiometer Calibration Certificate – calibration stickers are **NOT** acceptable
- Sound Level Meter - must measure down to at least 42 dBA (A Scale)
- Sound Level Meter – must be **SEPARATE** handheld calibration meter
- **CURRENT** Signed Sound Level Meter Calibration Certificate - calibration stickers are **NOT** acceptable
- Sound Field Speaker(s)
- Headphones or Insert Phones
- Bone Oscillator
- Recorded Speech Material – **NO LIVE VOICE ALLOWED**
- Necessary Cords
- Extension Cord(s)
- Syringe and necessary Supplies for Ear Impression – **MUST USE SILICONE** (may not use liquid and powder impression material)
- Otoscope
- Earlight

PRACTICAL EXAMINATION PROCEDURES FOR PURE TONE TESTING MASKING

Air Conduction

When To Mask

1. When the air conduction threshold of the test ear (TE) and the air conduction threshold of the non-test ear (NTE) differ by 40dB or more.
2. When the air conduction threshold of the TE and bone conduction threshold of the NTE differ by 40dB or more.

Procedure

- Select the initial amount of masking for the NTE: NTE air threshold plus **10-15dB**, then reestablish threshold.
- Each time the patient responds, increase masking by 5dB.
- Each time patient does not respond, increase signal in 5dB steps until patient responds.
- Continue until masking can be increased three consecutive 5dB steps without a threshold shift. At this point a plateau has been reached.
- Record both the masked threshold and the final masking level.

Bone Conduction

When To Mask

1. When unmasked bone conduction responses are asymmetric.
2. When the air conduction threshold of the TE and the bone conduction threshold of the **NTE** differ by 10-15dB or more.

Procedure

- Obtain bone conduction threshold in TE with the NTE unoccluded.
- Select the initial amount of masking for the NTE: NTE air threshold plus **10-15dB**, then reestablish threshold.
- Each time patient responds, increase masking by 5dB.
- Each time patient does not respond, increase signal in 5dB steps until patient responds.
- Continue until masking can be increased three consecutive 5dB steps without a threshold shift. At this point a plateau has been reached.
- Record both the masked threshold and the final masking level.

PRACTICAL EXAMINATION PROCEDURES FOR SPEECH TEST AND SPEECH TEST MASKING

Speech Reception Threshold

Procedure

1. Presentation level begins 10-15dB above the PTA of the test ear
2. Use spondee words
3. Use the bracketing method
 - a. 6 words per series
 - b. decrease stimuli in 5dB increments
 - c. record the lowest level that can be understood 50% of the time

When To Mask

1. When the SRT of the TE and SRT or pure tone average of the NTE differ by **40dB** or more
2. When the SRT of TE and pure tone bone conduction threshold average of the NTE differ by **40dB** or more

Procedure

- Obtain unmasked SRT in TE. Use a masking level in the NTE 30dB below the SRT of the TE. The masking level remains constant throughout procedure.
- Record the masked SRT and the masking level used.

Speech Discrimination

When To Mask

1. When the presentation level to the TE and SRT or pure tone average of the NTE differ by **40dB** or more.
2. When the presentation level to the TE and SRT or pure tone bone conduction threshold average of the NTE differ by **40dB** or more.

Procedure

- Use a masking level in the NTE 30dB below the speech discrimination presentation level of the TE. The masking level remains constant throughout procedure.
- Record masked discrimination score and the masking level used.

PRACTICAL EXAMINATION PROCEDURES FOR SOUND FIELD TESTING

SET UP PROCEDURE

1. Use recorded speech materials
2. Speaker placement--approximately 1 meter from test subject at ear level
3. Test subject placement--facing speaker

UNAIDED SRT

Present recorded speech material at 30dbHL above the better ear PTA which was recorded using phones or inserts. Use the same procedure in sound field that you used under phones or inserts to establish an unaided SRT.

UNAIDED SPEECH DISCRIMINATION

Present recorded speech material at normal conversational level (45 to 65 dbHL **or** 65 to 85 dbSSPL). Use the same procedure in sound field that you used under phones or inserts to establish an unaided discrimination score. The presentation level remains constant throughout the procedure.

AIDED SRT

Follow the same procedure for Aided SRT as you used in Unaided SRT Sound Field Testing, above.

AIDED SPEECH DISCRIMINATION

Follow the same procedure for Aided Speech Discrimination as you used in Unaided Speech Discrimination Sound Field Testing, above.

Sound field aided and unaided should be run in exactly the same manner so that the aided results would verify the improved discrimination that the hearing aids are providing.

Please note that live voice cannot be used during the sound field portion of the examination, as you will conduct all tests as if doing so, for example, in a nursing home (on site testing).

LIST OF HELPFUL REFERENCES

The reference material listed below may prove helpful to candidates in the review of the subject areas included in the examination. These materials may not contain all of the information needed to be competent in all categories or to pass the examination. This list does not denote endorsement of specific texts. This reference list is only a small sample of material available which contain the necessary information.

Hearing Aid Evaluation, Margaret Skinner, 1998, published by Prentice Hall, Englewood Cliffs, NJ 07632

Hearing Instrument Science and Fitting Practices, 2nd Edition, Robert E. Sandlin, 1997, Published by National Institute for Hearing Instrument Studies, 20361 Middlebelt Rd., Livonia, MI, 48152

Hearing Instrument Counseling, Max Chartrand, 1990, Published by National Institute for Hearing Instrument Studies, 20361 Middlebelt Rd, Livonia, MI 48152

Handbook of Clinical Audiology, 4th Edition, ed. Jack Katz, 1994, Published by Williams & Wilkins, 428 East Preston Street, Baltimore, MD 21202

Masking, Practical Applications of masking Principles and Procedures, Linda L. Larson-Donaldson, 1988, Published by National Institute for Hearing Instrument Studies, 20361 Middlebelt Rd., Livonia, MI 48152

Audiology, The Fundamentals, 2nd Edition, Fred Bess and Larry Humes, 1995, Published by Williams and Wilkins, 428 East Preston Street, Baltimore, MD 21202

Hearing Instrument Selection and Evaluation, Ernest Zeinick, 1987 Published by National Institute for Hearing Instrument Studies, 20361 Middlebelt Rd., Livonia, MI 48152

Strategies for Selecting and Verifying Hearing Aid Fittings, Michael Valente, 1994, Published by Thieme Medical Publishers, Inc., 381 Park Avenue South, New York, NY 10016

Training Manual for Professional in the Field of Hearing Instrument Sciences, 2nd Edition, C. Elaine Kramer, 1994 Published by National Institute for Hearing Instrument Studies, 20361 Middlebelt Rd., Livonia, MI 48152

Audiometric Interpretation, A Manual of Basic Audiometry, 2nd Edition, Harriett Kaplan, Vic S. Gladstone, and Lyle L. Lloyd, 1993, Published by Allyn and Bacon, 160 Gould St. Needham Hts., Massachusetts 02194

Handbook of Hearing Aid Amplification, Volumes 1 & 2, Ed. Robert Sandlin, 1988, Published by College Hill Press, 34 Beacon Street, Boston, Massachusetts 02108

Roeser's Audiology Desk Reference, Ross J. Roeser, 1996, Published by Thieme Medical Publisher's, Inc. 381 Parlz Avenue South, New York, NY 10010