Audiology (0340)

Test Guide Available
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Test at a Glance

Test Name	**Audiology**
Test Code	**0340**
Time	**2 hours**
Number of Questions	**150**
Format	**Multiple-choice questions**

	Content Categories	Approximate Number of Questions	Approximate Percentage of Examination
I.	Basic Human Communication Processes	40	26%
II.	Prevention/ID	15	10%
III.	Behavioral Assessment/Interpretation	20	13%
IV.	Electrophysiological Measurement/ Interpretation	12	8%
V.	Rehabilitative Assessment	16	11%
VI.	Rehabilitative Technology	16	11%
VII.	Rehabilitative Management	16	11%
VIII.	Professional Issues, Psychometrics, Research	15	10%

About this test

The Audiology test is intended primarily for examinees who are in or have completed master's-level programs. Recognized as the national examination in audiology, it is one of several requirements for the Certificate of Clinical Competence issued by the American Speech-Language-Hearing Association (ASHA). Some states use the examination as part of the licensure procedure. Examinees may obtain complete information about certification or licensure from the authority (ASHA, 10801 Rockville Pike, Rockville, MD 20852, or state or local) from which certification or licensure is sought.

Topics Covered

The following list represents the topics covered in editions of the test that are currently being administered. (The Roman numerals in parentheses refer to standards set by the American Speech-Language-Hearing Association.)

I. Basic Human Communication Processes (IV-B)

- Acoustics
  - calibration of audiometric equipment
  - principles of acoustics as related to audiological testing
  - principles of acoustics as related to speech sounds
  - the phonetic and phonological representations of speech sounds
- Anatomy and Development
  - anatomy and physiology of the hearing mechanism
  - attributes of the human ear
  - embryology of the ear
  - knowledge of syndromes
- Medical Diagnosis Studies
  - pathologies associated with various findings
- Pathologies
  - effects on auditory function
  - effects on various test procedures
- Physiology
  - assessment methods
  - effects of various lesions on function
  - systems responsible for various test results
- Psychoacoustics
  - auditory perception for various stimuli
  - response criteria
  - test parameters
- Speech-Language Sciences
  - developmental milestones
  - outcomes associated with various disorders
- Syndromes and Genetics
  - basic principles of genetics
  - conditions associated with various syndromes
  - genetic influences on speech and language production, reception, and processing

II. Prevention/ID (IV-C)

- Hearing Conservation
  - criteria for instituting and evaluating programs
  - selection of suitable tests
- Hearing Screening
  - conditions warranting hearing screening
  - guidelines for screening program
  - selection of appropriate screening procedures
- Ototoxicity
  - agents necessitating monitoring of hearing and vestibular function
- Universal Precautions
  - procedures for infection control

III. Behavioral Assessment/ Interpretation (IV-D)

- Behavioral Speech
  - characteristics of various test materials
  - selection of appropriate test materials and procedures
- Behavioral Tone
  - limitations of test procedures
  - patterns of test findings
  - selection of age-appropriate test methods
- Case History
  - collection and use of information from other agencies in an appropriate manner
  - interview of patient and significant others
  - potential etiological factors
  - present status
- Physical Examination
  - expected findings associated with various test results
  - otoscopy

IV. Electrophysiological Measurement/ Interpretation (IV-D)

- Auditory
  - appropriate selection of test procedures
  - findings associated with various pathologies
  - principles of specific measures
- Vestibular
  - findings associated with various pathologies
  - principles of specific measures
  - test findings associated with various lesions

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V. Rehabilitative Assessment

- Audiological Rehabilitative Assessment (IV-D)
  - influences of other sense modalities
  - selection of appropriate test methodology
- Evaluation of Disability/ Handicap (IV-D)
  - interpretation of findings
  - selection of appropriate instruments and procedures
- Hearing Aid Selection, Fit, and Verification (IV-E)
  - criteria for candidacy
  - differences in performance of various types
  - effects of modifications on performance
  - measurement procedures

VI. Rehabilitative Technology (IV-E)

- Assistive Devices
  - appropriate selection, assessment, and use of various devices
  - criteria for candidacy
- Cochlear Implants
  - coding strategies
  - criteria for candidacy
- Hearing Aid Instruments
  - function of hearing aid components
  - measures of hearing aid performance
  - performance characteristics of various circuits

VII. Rehabilitative Management (IV-E)

- Audiological Rehabilitative Management
  - age-appropriate techniques
  - implementation of appropriate methodologies
- Counseling
  - acceptance, adjustment, motivation, and coping
  - appropriate communication regarding information about assessment, treatment plans, progress, and results
  - interpersonal communication and counseling techniques
- Patient Management and Referral
  - criteria based on prognosis, progress, and motivation
  - data gathering and interpretation
  - procedures for referral and follow-up

VIII. Professional Issues, Psychometrics, Research

- Ethical Practices (IV-B)
  - confidentiality
  - informed consent
  - staffing issues
  - standards for professional conduct
  - referrals, permissions, client records
- Laws and Standards (IV-B)
  - appropriate management through knowledge of governmental, legislative, and regulatory mandates
  - knowledge of professional standards
- Multicultural/Deaf Culture (IV-B)
  - applications of theoretical models of language in society to the evaluation and treatment of hearing disorders
  - cultural and socioeconomic factors that influence speech, language, and hearing
  - service-delivery models
- Practice Management and Business (IV-D), (IV-E)
  - accrediting agencies
  - professional standards, record keeping, and office management
- Research Methodology/ Psychometrics (IV-B)
  - criteria for selection of test materials
  - determination of reliability and validity of assessment procedures
  - research integrity
  - test construction principles

The sample questions that follow illustrate the kinds of questions in the test. They are not, however, representative of the entire scope of the test in either content or difficulty. Answers with explanations follow the questions.

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the one that is best in each case.

1. A six-month-old child born with bilateral bony atresia is seen for an audiological evaluation and treatment recommendation. Radiological evidence indicates the probable presence of an intact middle ear and cochlea. ABR responses have been obtained at near-normal levels to bone-conducted signals. Of the following, the most appropriate course of action for this child at this time would be to

   (A) defer treatment until growth of the external and middle ear is complete at about age 6
   (B) suggest that surgery be initiated on at least one ear to permit a normal air-conducted pathway
   (C) recommend an implanted bone-anchored hearing aid
   (D) investigate the use of a bone-conduction hearing aid until audiological test results can be confirmed and surgery initiated when the child is older
   (E) counsel the parents concerning sign language and initiate a treatment program based on the use of all visual cues

2. Which of the following statements about a caloric response yielding a left unilateral weakness in the interpretation of electronystagmography results is most accurate?

   (A) It suggests a right peripheral vestibular disorder of the labyrinth.
   (B) It is of no real value in the interpretation.
   (C) It suggests a nonspecific (nonlocalizing) vestibular disorder.
   (D) It suggests a left peripheral vestibular disorder of either the labyrinthine or the VIIIth nerve.
   (E) It suggests a central vestibular disorder.

3. The accuracy of a hearing screening test in correctly identifying those individuals who actually have a hearing disorder is referred to as the screening test's

   (A) reliability
   (B) validity
   (C) precision
   (D) specificity
   (E) sensitivity

4. When schoolchildren with hearing impairments and schoolchildren with normal hearing are compared in terms of their performance on intelligence tests, it is generally true that the children with hearing impairments perform

   (A) no differently than children with normal hearing on verbal tests of intelligence, but less well than children with normal hearing on nonverbal tests
   (B) no differently than children with normal hearing on both verbal and nonverbal tests of intelligence
   (C) less well than children with normal hearing on both verbal and nonverbal tests of intelligence
   (D) less well than children with normal hearing on verbal tests of intelligence, but better than children with normal hearing on nonverbal tests
   (E) less well than children with normal hearing on verbal tests of intelligence, but no differently than children with normal hearing on nonverbal tests

5. Carol is a 34-year-old woman with a sudden-onset, left-sided facial paralysis that has been diagnosed as Bell palsy. Acoustic reflexes are present at normal levels bilaterally for both ipsilateral and contralateral stimulation. Which of the following statements accurately applies to this situation?

   (A) The pathology is proximal to the stapedial branch of the VIIth nerve.
   (B) The pathology is distal to the stapedial branch of the VIIth nerve.
   (C) The patient has a left acoustic neuroma.
   (D) The facial paralysis is probably nonorganic in nature.
   (E) No reliable statement can be made about VIIth nerve function, since the responses could be due to Vth nerve activity.

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6. Of the following, the most likely adult candidate for a cochlear implant is one with a

   (A) bilateral hearing loss due to chronic otitis media
   (B) bilateral hearing loss due to noise exposure
   (C) bilateral hearing loss due to adult meningitis
   (D) unilateral hearing loss of sudden onset and unknown etiology
   (E) unilateral hearing loss secondary to surgery for vestibular schwannoma (acoustic neuroma)

7. Which of the following accurately lists the typical hierarchy of phonetic features, in order from those easiest to those most difficult for persons with hearing impairments to distinguish?

   (A) Frication, place, duration, voicing
   (B) Frication, voicing, place, duration
   (C) Duration, frication, place, voicing
   (D) Voicing, duration, frication, place
   (E) Place, voicing, duration, frication

8. According to PL 99-457, a child under 2 years of age who has a hearing impairment must

   (A) be fitted with binaural hearing aids
   (B) have biannual hearing evaluations
   (C) be enrolled in a center-based habilitation program
   (D) have a written individualized family service plan
   (E) be provided with total communication training

9. Which of the following is the best choice of amplification for a person with bilateral moderate conductive hearing loss and chronic drainage from both ears?

   (A) Behind-the-ear aids with vented earmolds
   (B) A body-worn hearing aid
   (C) A vibrotactile aid
   (D) A bone-conduction hearing aid
   (E) A multichannel cochlear implant

10. In the measurement of real-ear sound-pressure levels with a probe-tube microphone system, insufficient probe-tube depth will tend to

    (A) increase the high-frequency response
    (B) decrease the high-frequency response
    (C) decrease the response at all frequencies
    (D) decrease the low-frequency response
    (E) increase the low-frequency response

11. Click-evoked otoacoustic emissions are most likely to be recorded from the ears of which of the following individuals?

    (A) A person with a profound hearing loss
    (B) A person with severe presbycusis
    (C) A person with an upper brainstem lesion
    (D) A person with otitis media
    (E) A person who has ingested large quantities of aminoglycosides

12. A client would like copies of test results sent to his physician. Which of the following procedures must be followed?

    (A) The client must supply a letter from his physician requesting the information.
    (B) The client must provide the correct name and address of the physician.
    (C) The client must sign a release-of-information form.
    (D) The client's request must be refused.
    (E) The audiologist must call the physician to verify the need for the information.

Answers

1. The evaluation shows that the middle ear and the cochlea are probably intact and that a surgeon has only to open the occluded canals for hearing to be made functional. However, to perform surgery on a six-month-old child without having more information about hearing competence would be unwarranted. Because bilateral atresia often can be handled through a bone-conduction hearing aid, such a device should be tried first and the child's growth and development monitored to determine when surgery should take place. D is therefore the best answer.

2. A unilateral weakness indicates a disorder of the labyrinth or the VIIIth nerve on the same side as the weakness. Thus, in this case the disorder is indicated on the left, not the right, side: (D) is the correct answer and (A) is incorrect. The finding is of great value, since it has determined that a unilateral peripheral problem exists, so (B) is incorrect. (C) is incorrect because the disorder is localized to the periphery. (E) is incorrect because a central disorder is ruled out by these results.

3. The question gives a definition of test sensitivity, so (E) is the correct answer. (A) is incorrect because not all sensitive tests have reliability (the ability of the test to show consistent results for the same subject under different conditions). Validity is the ability of a test to measure what it is designed to measure; a test can be sensitive without being valid if there are too many false-positives, so (B) is incorrect. (C) is incorrect because a test can correctly identify individuals with hearing disorders without identifying the subjects' precise thresholds. Specificity refers to how accurately the test identifies those individuals who do not have a hearing loss, so (D) is incorrect.

4. Hearing impairments in young children often result in language delay, so low verbal scores are common among schoolchildren with hearing impairments. Hearing impairments alone do not affect intelligence, however, so if the children are tested in such a way that language ability is not a factor, children with hearing impairments will perform at the same level as their normal-hearing peers. Therefore, (E) is the correct answer.

5. The acoustic reflex measurement helps to determine the site of lesion of facial nerve disorder as either distal or proximal to the stapedial branch of the VIIth nerve. If the acoustic reflex is present at normal HTL's, the localization of pathology is likely distal to the stapedius branch of the nerve. The best answer is B.

6. Cochlear implants are typically recommended only for individuals with profound bilateral sensorineural hearing losses; adult meningitis is likely to cause such hearing loss, so (C) is the correct answer. (A) and (B) are incorrect because individuals with hearing losses due to noise exposure or chronic otitis media are likely to benefit from amplification; hearing losses with those etiologies tend to be less than profound. Unilateral hearing losses generally do not require intervention as drastic as a cochlear implant, so (D) and (E) are incorrect. Furthermore, (E) is incorrect because successful use of a cochlear implant requires an intact auditory nerve (VIIIth nerve) and surgery for vestibular schwannoma usually destroys this nerve.

7. Voicing entails an increase in intensity great enough for many people with hearing impairments to distinguish; it is the easiest feature to distinguish. Differences in duration can be distinguished by visual cues; frication and, to an even greater extent, place distinctions are not easily visible and occur at high frequencies that are generally less intense than lower frequencies. (D) is the only answer choice that lists the four features in order, so it is the correct answer.

8. P.L. 99-457 specifies that a plan be developed, but does not specify the type of services to be delivered. (D) is thus the correct answer; all other answer choices specify particular types of services.

9. A bone-conduction hearing aid can boost the bone-conduction signal and provide enough amplification to be helpful to clients with moderate hearing loss, and the hearing aid will not interfere with the drainage of the ear, so (D) is the correct answer. Hearing aids with earmolds are unsuitable for clients with chronic drainage because the drainage would damage the earmold and the additional blockage of the external canal would exacerbate the drainage problem and increase the likelihood of infection; thus (A) is incorrect. Body-worn hearing aids are coupled to earmolds and may provide more power than is necessary for people with only moderate hearing loss, so (B) is incorrect. Vibrotactile aids and cochlear implants are useful only for clients with profound hearing losses who cannot benefit from amplification, so (C) and (E) are incorrect.

10. Probe tubes for measuring real-ear sound-pressure levels (SPL) should be inserted as close to the tympanic membrane as possible, since it is the SPL at the tympanic membrane that is being measured. If the probe tube is too far from the tympanic membrane, high-frequency sound waves bounced off the eardrum will dissipate before reaching the probe, but low-frequency sound waves, which do not dissipate as easily, will be essentially unaffected. The overall effect will thus be a decrease only in the high-frequency response, and (B) is the correct answer.

11. Upper brainstem lesions do not always interfere with otoacoustic emissions, so otoacoustic emissions can be recorded from the ears of persons with upper brainstem lesions, and (C) is the correct answer. (A), (B), and (E) are incorrect because severe or profound hearing loss and ototoxic medications such as aminoglycosides cause a loss of spontaneous emissions. (D) is incorrect because transmission of emissions is poor when the impedance of the middle ear is abnormal, as in cases of otitis media.

12. The release of information to a third party requires the signature of the client to ensure that confidential information is being handled properly and with the full consent of the client, so (C) is the correct answer. It is not necessary for the physician to request, or even need, the information, so (A) and (E) are incorrect. (B) is incorrect because the name and address of the physician need not be supplied by the client. (D) is incorrect because if written consent is obtained, there is no reason to refuse the client's request.