



ALL INDIA INSTITUTE OF SPEECH AND HEARING  
MANASAGANGOTTHRI  
MYSURU 570 006  
Ph.D. ENTRANCE EXAMINATION 2022 – 23  
(AUDIOLOGY)

Time: 2 Hrs 30 minutes

Max. Marks 100

PART A

**Instructions:** Answer all questions (01 x 50 = 50 marks)  
Each question carries one mark  
Do not overwrite

- 1 The earliest external feature of the auditory development is the appearance of \_\_\_\_\_  
a) Otic Placodes      b) Otic Vesicle      c) Otic Pit      d) Notochord
- 2 The GJB2 mutation causes faulty production of \_\_\_\_\_  
a) Connexin 26      b) Connexin 28      c) Connexin 25      d) Connexin 30
- 3 An up-beating right torsion type nystagmus during positional/positioning testing, when the patient is in supine position, indicates \_\_\_\_\_  
a) Right posterior canal BPPV      b) Left posterior canal BPPV      c) Right anterior canal BPPV      d) Left anterior canal BPPV
- 4 The bithermal caloric test is predominantly a test of \_\_\_\_\_  
a) Anterior semicircular canal function      b) Posterior semicircular canal function      c) Lateral semicircular canal function      d) Otolith organs
- 5 Among the following, a false statement about cVEMP is \_\_\_\_\_  
a) The air conduction cVEMP is a test of saccular function      b) The air conduction cVEMP can be elicited by electrical stimuli      c) The first positive peak in air conduction cVEMP waveform is caused by an inhibition of the ongoing EMG      d) The air conduction cVEMP can be present despite a conductive hearing loss
- 6 The structure separating the scala vestibuli from the scala media is \_\_\_\_\_  
a) Tectorial membrane      b) Basilar Membrane      c) Reticular lamina      d) Reissne's membrane

- 7 The regulation of Perilymph in the inner ear primarily occurs through \_\_\_\_\_
- a) Cochlear aqueduct      b) Vestibular aqueduct      c) Hensen cells      d) Habenula Perforata
- 8 The ribbon synapse is a characteristic feature common to \_\_\_\_\_
- a) Type I vestibular hair cells, retinal photoreceptors and cochlear inner hair cells      b) Type II vestibular hair cells, retinal Photoreceptors and Cochlear outer hair cells      c) Type I vestibular hair cells, retinal photoreceptors and Cochlear outer hair cells      d) Type II vestibular hair cells, retinal photoreceptors and cochlear inner hair cells
- 9 The primary excitatory neurotransmitter in central auditory nervous system is \_\_\_\_\_
- a) GABA      b) Glutamate      c) Acetylcholine      d) Glycine
- 10 Among the following, which statement about the low spontaneous firing rate neurons is *NOT* true?
- a) Low spontaneous rate neurons terminate on the modiolar side of IHCs      b) Low Spontaneous rate neurons terminate on the pillar side of IHCs      c) Low spontaneous rate neurons are thin      d) Low spontaneous rate neurons have a spontaneous firing rate below 2 Hz
- 11 \_\_\_\_\_ is *NOT* a nucleus in the superior olivary complex.
- a) Medial superior olivary nucleus      b) Lateral superior olivary nucleus      c) Dorsal superior olivary nucleus      d) Medial nucleus of the trapezoid body
- 12 In ECochG, a difference of  $>0.4$ ms between the opposite polarity stimuli is a typical finding in \_\_\_\_\_
- a) Auditory Neuropathy Spectrum Disorders      b) Meniere's Disease      c) Central Auditory Processing Disorders      d) Benign Paroxysmal Positional Vertigo
- 13 Among the artifacts obtained during the recording of auditory evoked potential, the artifact with a possibility of highest frequency is \_\_\_\_\_
- a) Eye movements      b) Muscle movements      c) Tongue movements      d) Blood vessels
- 14 \_\_\_\_\_ captures the individual's ear canal acoustics and applies the same to the coupler measures to predict the real ear aided gain.
- a) Real ear aided gain      b) Real ear coupler difference      c) Real ear saturation response      d) Real ear Insertion gain

- 15 If a hearing aid has an attack time of 10 msec and a release time of less than 50 msec, then the hearing aid is said to have \_\_\_\_\_
- a) Dual Compression      b) Syllabic Compression      c) Slow Compression      d) Automatic Volume Control
- 16 Which of the following methods use loudness normalization based on hearing thresholds for the calculation of target gain?
- a) DSLmi/o      b) NAL-Non-Linear Equations      c) LGOB      d) CAM2
- 17 Acceptable Noise Level (ANL) is calculated by \_\_\_\_\_
- a) Subtracting Background Noise Level from the Most Comfortable Level      b) Subtracting Most Comfortable Level from the Background Noise Level      c) Subtracting hearing thresholds from Background Noise Levels      d) Subtracting Background Noise Levels from Hearing Thresholds
- 18 \_\_\_\_\_ has the best correlation with the upper stimulation levels in cochlear implants.
- a) eCAP thresholds      b) ESRT      c) eABR      d) eLLR
- 19 Which one of the following is true with reference to MED-EL cochlear implant?
- a) Electrical threshold is defined as the minimum amount of electrical stimulation the recipient can defend 100 % of the time      b) Threshold is set at the highest level of electrical stimulation at which a response is not obtained      c) The electrical threshold is referred to as T levels      d) The electrical threshold is defined as lowest amount of electrical stimulation a user can detect with 50% accuracy
- 20 The current cochlear implant candidacy criteria for single sided deafness for adults in Med-El company is \_\_\_\_\_
- a) Hearing thresholds  $\geq 90$  dB HL and  $\leq 5\%$  CNC word recognition in the ear to be implanted      b) Hearing thresholds  $\geq 90$  dB HL and  $\leq 20\%$  CNC word recognition in the ear to be implanted      c) Hearing thresholds  $\geq 80$  dB HL and  $\leq 5\%$  CNC word recognition in the ear to be implanted      d) Hearing thresholds  $\geq 80$  dBHL and  $\leq 20\%$  CNC word recognition in the ear to be implanted
- 21 A type of research in which groups formed on the basis of one dependent variable are compared on the basis of the same or other dependent variables is known as \_\_\_\_\_
- a) Experimental research      b) Two group experimental research      c) Standard group comparison      d) Single group experimental research

- 22 Assessing whether the instrument is measuring what it claims to measure is known as \_\_\_\_\_
- a) Content validity    b) Criterion validity    c) Computational validity    d) Ecological validity
- 23 \_\_\_\_\_ is one of the measures of central tendency that is defined as the score that occurs most frequently in a data set.
- a) Mean                      b) Median                      c) Mode                      d) Interval
- 24 A 1 kHz pure tone signal presented binaurally in the free field is said to have the loudness of 1 sone when its level is \_\_\_\_\_
- a) 20 dB SPL              b) 20 dB HL              c) 40 dB SPL              d) 40 dB HL
- 25 The DLF is \_\_\_\_\_ at low frequencies and \_\_\_\_\_ monotonically with increasing frequency.
- a) Largest; decreases    b) Smallest; decreases    c) Largest; increases    d) Smallest; increases
- 26 EEG activity is generally of \_\_\_\_\_ amplitude.
- a) < 0.5 millivolt    b) 1 millivolt    c) 1.5 millivolt    d) 2 millivolt
- 27 Computerized Tomography presents information on \_\_\_\_\_
- a) bone anatomy    b) liquid like areas    c) membranes    d) All of the above
- 28 When a signal of a particular frequency is sampled too slowly, the result gives the appearance of a signal with a lower frequency than the original. This phenomenon is called \_\_\_\_\_
- a) Discretization error    b) Quantization error    c) Aliasing error    d) Nyquist's error
- 29 In \_\_\_\_\_ screening check list of Auditory Processing Disorders, the questions are framed in five content areas.
- a) SIFTER              b) CHAPS              c) Fisher's auditory problem checklist    d) SCAP
- 30 Which of the following monaural low redundancy tests are not based on spectral degradation?
- a) Low Pass Filtered speech test    b) Speech in Noise test    c) Time Compressed Speech test    d) Synthetic Sentence identification with ipsilateral competing message

- 31 Relationship between a pure-tone and speech masking level difference (MLD) is that \_\_\_\_\_
- a) MLD for speech is smaller than Pure tones      b) MLD for Pure tone is smaller than speech      c) MLD for speech = MLD for Pure tones      d) No relation
- 32 Which of the following is not a bottom up technique for the management of central auditory processing disorders?
- a) Use of Clear Speech      b) Use of Assistive listening devices      c) Improving acoustic environment      d) Instructional Modifications
- 33 Which of these is not a major cue for the perception of voicing?
- a) VOT      b) Burst      c) Preceding vowel duration      d) Closure duration
- 34 The energy of Nasal Murmurs are strong at around \_\_\_\_\_
- a) 500 Hz      b) 1000 Hz      c) 2000 Hz      d) 4000 Hz
- 35 Which of the following are the cues for the perception of both place and manner of stop consonants?
- a) VOT, burst and closure duration      b) VOT, but not burst and transition      c) VOT, but not transition and closure duration      d) VOT but not burst and closure duration
- 36 The most common genetic cause associated with Aminoglycoside ototoxicity is \_\_\_\_\_
- a) Autosomal dominant inheritance      b) Autosomal recessive inheritance      c) X-linked inheritance      d) Mitochondrial deficits
- 37 Facial nerve paralysis is more common in \_\_\_\_\_ due to head trauma.
- a) Longitudinal fracture      b) Transverse fracture      c) Mixed fracture      d) All of the above
- 38 Cholesleotoma is most common in \_\_\_\_\_.
- a) Tubotympanic disease      b) Atico antrum perforation      c) Central perforation of Tympanic membrane      d) All of the above

- 39 For temporal modulation transfer functions, the threshold is almost independent of modulation rate for rates upto \_\_\_\_\_.
- a) > 50 Hz                      b) 30-50 Hz                      c) >1000 Hz                      d) No relation between modulation rate and threshold
- 40 Timbre perception depends on \_\_\_\_\_ aspects of sound.
- a) Spectral component                      b) Temporal Component                      c) Both (a) & (b)                      d) None of the above
- 41 The relationship between Inter aural latency differences (ILD) and frequency is \_\_\_\_\_.
- a) ILDs are negligible at low frequency                      b) ILDs are negligible at high frequency                      c) ILDs are as high as 20dB for low frequency                      d) Both (b) & (c)
- 42 Canal caps provide maximum attenuation at frequencies \_\_\_\_\_.
- a) >1000 Hz                      b) < 1000 Hz                      c) > 500 Hz                      d) < 500 Hz
- 43 Which one of the following is a synchronous type of telehealth practice?
- a) E-mail                      b) Multi-media message                      c) Video conferencing                      d) Text message
- 44 Reverberation time needed for listener's with sensorineural hearing loss for speech perception is approximately \_\_\_\_\_.
- a) 0.4 to 0.5 s                      b) 0.7 to 0.8 s                      c) 0.8 to 0.9 s                      d) More than 1 s
- 45 In dichotic perception, right ear advantage (REA) is larger for \_\_\_\_\_.
- a) Consonant vowel than vowel alone                      b) Vowel than consonant vowel                      c) When the consonant differ only in voicing                      d) When the consonant differ only in place
- 46 Which of the following condition results in a 'third window' in the labrynthine system?
- a) Meniere's disease                      b) BPPV                      c) Semicircular canal dehiscence syndrome                      d) Otosclerosis
- 47 Which of the following types of presbycusis would you see a fairly flat audiogram?
- a) Sensory                      b) Neural                      c) Strial                      d) Cochlear conductive

- 48 Which of the following test of central auditory processing disorders is majorly sensitive for brainstem lesion?
- a) Pitch Pattern test    b) Dichotic C V Test    c) Gaps in noise test    d) Masking level difference
- 49 Which of the following auditory processing deficit is not included in Buffalo Model of central auditory processing disorders?
- a) Auditory decoding    b) Integration    c) Tolerance Fading    d) Temporal Processing
- 50 Psychophysical tuning curves (PTCs) generated under forward masking conditions generally show \_\_\_\_\_ tuning curves than those for simultaneous masking conditions.
- a) sharper    b) broader    c) similar    d) No relation

### PART B

**Answer any five Questions. Each question carries 10 marks: (05 x 10 = 50 marks)**

1. For a school leaving screening program, enlist the tests you would use and justify their selection.
2. Write a note on fitting of hearing device/s for an individual with bilateral steeply sloping sensorineural hearing loss.
3. Critically evaluate the currently used speech coding strategies of cochlear implants.
4. How could you estimate the shape of auditory filters? Describe the methods in detail.
5. Discuss the histopathological findings and its audiological correlate of sudden sensorineural hearing loss.
6. What are the objective tests of Vestibular assessment? Describe any two of them in detail.
7. Explain the coding of binaural cues in the auditory brainstem.

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