UNIVERSITY OF MYSORE
Ph.D. Entrance Examination, Nov. - 2020

SUBJECT CODE : **0 6**

Entrance Reg. No.

QUESTION BOOKLET NO.

500192

QUESTION BOOKLET
(Read carefully the instructions given in the Question Booklet)

SUBJECT : **AUDIOLOGY**

MAXIMUM MARKS : 100

MAXIMUM TIME : THREE HOURS

(Including initial 10 minutes for filling O.M.R. Answer sheet)

INSTRUCTIONS TO THE CANDIDATES

1. The sealed questions booklet containing 50 questions enclosed with O.M.R. Answer Sheet is given to you.
2. Verify whether the given question booklet is of the same subject which you have opted for examination.
3. Open the question paper seal carefully and take out the enclosed O.M.R. Answer Sheet outside the question booklet and fill up the general information in the O.M.R. Answer sheet. If you fail to fill up the details in the form of alphabet and signs as instructed, you will be personally responsible for consequences arising during scoring of your Answer Sheet.
4. During the examination:
   a) Read each question carefully.
   b) Determine the Most appropriate/correct answer from the four available choices given under each question.
   c) Completely darken the relevant circle against the Question in the O.M.R. Answer Sheet. For example, in the question paper if "C" is correct answer for Question No.8, then darken against Sl. No.8 of O.M.R. Answer Sheet using Blue/Black Ball Point Pen as follows:

Question No. 8. Ⓐ Ⓑ ● Ⓓ (Only example) (Use Ball Pen only)

5. Rough work should be done only on the blank space provided in the Question Booklet. <u>Rough work should not be done on the O.M.R. Answer Sheet.</u>
6. <u>If more than one circle is darkened for a given question, such answer is treated as wrong and no mark will be given. See the example in the O.M.R. Sheet.</u>
7. The candidate and the Room Supervisor should sign in the O.M.R. Sheet at the specified place.
8. Candidate should return the original O.M.R. Answer Sheet and the university copy to the Room Supervisor after the examination.
9. Candidate can carry the question booklet and the candidate copy of the O.M.R. Sheet.
10. The calculator, pager and mobile phone are not allowed inside the examination hall.
11. **If a candidate is found committing malpractice, such a candidate shall not be considered for admission to the course and action against such candidate will be taken as per rules.**

INSTRUCTIONS TO FILL UP THE O.M.R. SHEET

1. There is only one most appropriate/correct answer for each question.
2. For each question, only one circle must be darkened with BLUE or BLACK ball point pen only. Do not try to alter it.
3. Circle should be darkened completely so that the alphabet inside it is not visible.
4. Do not make any stray marks on O.M.R. Sheet.

ಗಮನಿಸಿ : ಸೂಚನೆಗಳ ಕನ್ನಡ ಆವೃತ್ತಿಯು ಈ ಮಸ್ತಕದ ಹಿಂಭಾಗದಲ್ಲಿ ಮುದ್ರಿಸಲ್ಪಟ್ಟಿದೆ.

M-5287

PART - A

This part shall contains 50 multiple choice/objective type questions, each question carrying one mark. [50 × 1 = 50]

1) Open ear canal acts as a _____
   (A) Low pass filter
   (B) Band reject filter
   (C) High pass filter
   (D) Band pass filter

2) The boost provided by middle ear transformer action is more around
   (A) Low frequencies
   (B) Mid frequencies
   (C) High frequencies
   (D) It is same across all frequencies

3) The bending of hair cellstereocilia during hair cell transduction involves a motion across the cochlear duct in _____ direction.
   (A) longitudinal
   (B) transverse
   (C) radial
   (D) rotational

4) Opening of the transduction channels of hair cells at the apex results in _____
   (A) outflow of sodium
   (B) inflow of sodium
   (C) outflow of potassium
   (D) inflow of potassium

5) At a given frequency, as the intensity increases, the place of maximum cochlear microphonic magnitude _____
   (A) shifts to base
   (B) shifts to apex
   (C) remains same
   (D) depends on the frequency

6) In the auditory nerve, the fibres with highest threshold generally have _____ spontaneous rate.
   (A) Low
   (B) Medium
   (C) High
   (D) Any of the above

7) Which of the following types of cells of cochlear nucleus faithfully transmit temporal activity of speech sounds?
   (A) Spherical bushy cells of VCN
   (B) Pyramidal cells
   (C) Cells of DCN
   (D) All of the above

8) Which of the semicircular canals communicate at both ends with utricle?

(A) Anterior

(B) Posterior

(C) Lateral

(D) All the three

9) Primary plane of action of extraocular muscles, medial and lateral rectus is _____

(A) Horizontal plane

(B) Vertical plane

(C) Clockwise torsional

(D) Anticlockwise torsional

10) Which of the following couplers can be used to calibrate supraural earphones of audiometer?

(A) HA1 coupler

(B) HA2 coupler

(C) NBS9A coupler

(D) None of the above

11) During pure tone audiometry, higher thresholds are obtained if the duration of the signal is less than _____

(A) 1 sec

(B) 500 msec

(C) 200 msec

(D) Threshold does not depend on duration

12) When two frequencies are presented, if the output of a system has input frequencies as well sum and difference of the input frequencies, the system is said to have _____

(A) Intermodulation distortion

(B) Modulation distortion

(C) Harmonic distortion

(D) All of the above

13) In which of the following conditions can pure tone audiogrammislead the clinical diagnosis?

(A) Large Vestibular Aqueduct syndrome

(B) Superior Semicircular canal Dehescience

(C) Intracranial hypertension

(D) All of the above

14) Which of the following cue is plays a major role in localizing signals which have wavelength shorter than the head width?

(A) interaural time difference
(B) interaural phase difference
(C) interaural intensity difference
(D) all of the above

15) Which of the following can have an effect on interaural attenuation?

(A) Type of transducer
(B) Frequency spectrum off the test signal
(C) Subject being tested
(D) All of the above

16) What is the effect of failure of active mechanism on characteristic frequency of the basilar membrane?

(A) Shifts to lower frequency
(B) Shifts to higher frequency
(C) Shifts to lower or higher frequency
(D) Does not alter characteristic frequency

17) Which of the following conditions will reduce admittance at the tympanic membrane?

(A) Otosclerosis
(B) Tympanosclerosis
(C) Middle ear effusion
(D) All of the above

18) During 226 Hz probe tympanometry, if ear canal volume estimated using positive tail and negative tail of tympanogram are compared

(A) Ear canal volume measured using positive tail will show higher value
(B) Ear canal volume measured using negative tail will show higher value
(C) There will be no difference in the ear canal volume
(D) Ear canal volume cannot be measured using negative tail

19) What is the most commonly used stimulus for wide band acoustic immittance measurements?

(A) Upward sweeping pure tones
(B) Downward sweeping pure tones
(C) Simultaneously presented pure tones
(D) Any of the above

20) If peak compensated measurements are carried out across frequencies, which of the following component value will be zero near resonant frequency?

(A) Susceptance

(B) Conductance

(C) Admittance

(D) All of the above

21) Wide band acoustic immittance measurements in persons with normal middle ear will show maximum absorbance at

(A) High frequencies

(B) Mid frequencies

(C) Low frequencies

(D) Same across all frequencies

22) What is effect of loud sound on middle ear immittance?

(A) Decrease in admittance

(B) Decrease in impedance

(C) Increase in admittance

(D) Any of the above

23) Equal loudness contours in persons with normal hearing show that the loudness grows more steeply at

(A) low frequencies

(B) mid frequencies

(C) high frequencies

(D) low and high frequencies

24) Which of the following is a preferred masker while measuring psychoacoustic tuning curve?

(A) Broadband noise

(B) Narrowband noise

(C) Pure tones

(D) None of the above

25) Type of non simultaneous masking in which the signal precedes the masker is known as _____

(A) Post stimulatory masking

(B) Forward masking

(C) Upward masking

(D) Backward masking

26) Dead region is said to be present if there is a minimum shift _____ dB in masked threshold in presence of threshold equalizing noise.

(A) 5 dB
(B) 10 dB
(C) 20 dB
(D) 30 dB

27) Clinically, it is recommended that reflex decay test be administered at

(A) 500 Hz
(B) 500 Hz and 1000 Hz
(C) 500,1000 and 2000 Hz
(D) 500,1000, 2000 and 4000 Hz

28) Excitation of the anterior semicircular.canals produces _____ movement of eyeballs.

(A) Upward and torsional movement
(B) Downward and torsional eye movements
(C) Horizontal movement and torsional movement
(D) Torsional movement

29) Stimulus for TEOAEs is calibrated in _____

(A) dB SPL
(B) dBpeSPL
(C) dB HL
(D) dBnHL

30) Which of these peaks of cABR corresponds to the fundamental frequency of the stimulus?

(A) A, D, E, F, O
(B) D, E, F, O
(C) A, D, E, F
(D) D, E, F

31) Performance on which of the following tests will be maximally affected when there is a lesion affecting interhemispheric pathways?

(A) Dichotic tests
(B) Binaural interaction tests
(C) Monaural low redundancy tests
(D) All are equally affected

32) Which of the following tests can be used to assess integrity of auditory nerve in persons using cochlear implants?

(A) eABR
(B) eSRT
(C) eCAP
(D) All of the above

33) According to Bellis/Ferre model, a person who cannot discriminate between two sounds has _____

(A) Integration deficit
(B) Interaction deficit
(C) Decoding deficit
(D) None of the above

34) Which of the following tests can be used to obtain thresholds in person with unilateral functional hearing loss?

(A) Lombard test
(B) Stenger test
(C) Swinging story test
(D) None of the above

35) According to the Jastreboff's Neurophysiological model of tinnitus, in persons suffering from tinnitus, an auditory stimulus activates _____

(A) Limbic system
(B) Autonomic nervous system
(C) Limbic and autonomic nervous system
(D) None of the above

36) Use of which of the following technologies is considered as telehealth practice?

(A) Text message over phone
(B) Email
(C) Video conferencing
(D) All of the above

37) While programming a cochlear implant, if the desired current level cannot be reached due to voltage constraints, then the clinician can ____ to reach the desired loudness.

(A) Increase rate
(B) Decrease rate
(C) Decrease pulse width
(D) Increase pulse width

38) While describing genetic hearing loss, 'DFNB' indicates that the mode of inheritance is _____

(A) Maternal
(B) Autosomal dominant
(C) Autosomal recessive
(D) Mode of inheritance cannot be predicted

39) Gain of a hearing aid is calculated by _____

(A) Subtracting input amplitude from output amplitude

(B) Dividing input amplitude by from output amplitude

(C) Subtracting output amplitude from input amplitude

(D) Dividing output amplitude from input amplitude

40) Directivity index of a microphone refers to the ratio of _____

(A) sensitivity for frontal sounds relative to sensitivity averaged across all directions

(B) sensitivity for frontal sounds relative to sensitivity for rear sounds

(C) sensitivity across vertical direction relative to sensitivity across horizontal direction

(D) sensitivity for rear sounds relative to sensitivity averaged across all directions

41) If a client complains of boomy voice while using a hearing aid, it is recommended to

(A) increase gain at low frequencies

(B) decrease gain at low frequencies

(C) decrease gain at high frequencies

(D) change the compression ratio

42) For hearing aids with multiple compression bands, when compared to gain measured for a pure tone sweep, gain for speech will be

(A) same   (B) more

(C) less   (D) cannot be predicted

43) Which of the following couplers is not designed for electroacoustic measurement of Behind the ear hearing aid?

(A) HA1 coupler   (B) HA2 coupler

(C) HA4 coupler   (D) All of the above

44) Which of the following equation is correct?

(A) REAR=REAG+input SPL

(B) REAR=REUR+input SPL

(C) REUR=REAG+input SPL

(D) REAG=REAR+input SPL

45) Which of the following deformities is described as Michel's aplasia?

(A) Absence of cochlear

(B) Absence of cochlear and vestibule

(C) Absence of cochlear and cochlear aqueduct

(D) Absence of cochlear, vestibule, semicircular canals, vestibular and cochlear aqueduct

46) Which of the following statements about formant frequencies of vowels is correct?

(A) As the vowel height increases, F1 increases

(B) The distance between F1 and F2 is greater for front vowels when compared to back vowels

(C) Lengthening of vocal tract increases formant frequencies

(D) All are correct

47) Fitting hearing aid with compression offers little advantage over a well fitted linear hearing aid for which of the following sounds?

(A) Low frequency sounds

(B) Moderate sounds

(C) Loud sounds

(D) High frequency sounds

48) What type of electrical stimulation is used for mapping Auditory brainstem implants?

(A) Monopolar stimulation

(B) Bipolar stimulation

(C) Monopolar or bipolar

(D) Monopolar and bipolar stimulation

49) In the middle ear implants, acoustic energy is transduced to provide vibratory stimulation to _____

(A) Ossicles

(B) Ossicles or tympanic membrane

(C) Ossicles or cochlear fluids

(D) Ossicles or tympanic membrane or cochlear fluids

50) Which of the following about Incomplete partition type I (IP 1) is not true?

(A) Majority of children with IP1 abnormality have severe to profound hearing loss

(B) Majority of children with IP1 abnormality benefit from cochlear implants

(C) Size of the cochlear is reduced in a majority of children with IP1 abnormality

(D) All the sentences are true

PART - B

This part shall contains five questions, each question carrying ten marks.

[5 × 10 = 50]

1) Write a note on application, strengths and limitation of telemedicine in the field of Audiology.

2) Discuss the recent advances in electrophysiological measures for assessment of hearing.

3) Discuss the role of audiologist in assessment and management of persons with vertigo.

4) Discuss the advances in hearing aid technology to improve speech perception in noise.

5) Critically comment on the changing criteria for cochlear implant candidacy.

● ● ●

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

1. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯ ಜೊತೆಗೆ 50 ಪ್ರಶ್ನೆಗಳನ್ನು ಹೊಂದಿರುವ ಮೊಹರು ಮಾಡಿದ ಪ್ರಶ್ನೆ ಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗಿದೆ.

2. ಕೊಟ್ಟಿರುವ ಪ್ರಶ್ನೆ ಪುಸ್ತಕವು, ನೀವು ಪರೀಕ್ಷೆಗೆ ಆಯ್ಕೆ ಮಾಡಿಕೊಂಡಿರುವ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದ್ದೇ ಎಂಬುದನ್ನು ಪರಿಶೀಲಿಸಿರಿ.

3. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಮೊಹರನ್ನು ಜಾಗ್ರತೆಯಿಂದ ತೆರೆಯಿರಿ ಮತ್ತು ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯಿಂದ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯನ್ನು ಹೊರಗೆ ತೆಗೆದು, ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಸಾಮಾನ್ಯ ಮಾಹಿತಿಯನ್ನು ತುಂಬಿರಿ. ಕೊಟ್ಟಿರುವ ಸೂಚನೆಯಂತೆ ನೀವು ನಮೂನೆಯಲ್ಲಿನ ವಿವರಗಳನ್ನು ತುಂಬಲು ವಿಫಲರಾದರೆ, ನಿಮ್ಮ ಉತ್ತರ ಹಾಳೆಯ ಮೌಲ್ಯಮಾಪನ ಸಮಯದಲ್ಲಿ ಉಂಟಾಗುವ ಪರಿಣಾಮಗಳಿಗೆ ವೈಯಕ್ತಿಕವಾಗಿ ನೀವೇ ಜವಾಬ್ದಾರರಾಗಿರುತ್ತೀರಿ.

4. ಪರೀಕ್ಷೆಯ ಸಮಯದಲ್ಲಿ:
   a) ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಯನ್ನು ಜಾಗ್ರತೆಯಿಂದ ಓದಿರಿ.
   b) ಪ್ರತಿ ಪ್ರಶ್ನೆಯ ಕೆಳಗೆ ನೀಡಿರುವ ನಾಲ್ಕು ಲಭ್ಯ ಆಯ್ಕೆಗಳಲ್ಲಿ ಅತ್ಯಂತ ಸರಿಯಾದ/ ಸೂಕ್ತವಾದ ಉತ್ತರವನ್ನು ನಿರ್ಧರಿಸಿ.
   c) ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯಲ್ಲಿನ ಸಂಬಂಧಿಸಿದ ಪ್ರಶ್ನೆಯ ವೃತ್ತಾಕಾರವನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ತುಂಬಿರಿ. ಉದಾಹರಣೆಗೆ, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಪ್ರಶ್ನೆ ಸಂಖ್ಯೆ 8ಕ್ಕೆ "C" ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದರೆ, ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಬಳಸಿ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯ ಕ್ರಮ ಸಂಖ್ಯೆ 8ರ ಮುಂದೆ ಈ ಕೆಳಗಿನಂತೆ ತುಂಬಿರಿ:

   ಪ್ರಶ್ನೆ ಸಂಖ್ಯೆ 8.Ⓐ Ⓑ ⬤ Ⓓ (ಉದಾಹರಣೆ ಮಾತ್ರ) (ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರ ಉಪಯೋಗಿಸಿ)

5. ಉತ್ತರದ ಪೂರ್ವಸಿದ್ಧತೆಯ ಬರವಣಿಗೆಯನ್ನು (ಚಿತ್ತು ಕೆಲಸ) ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಒದಗಿಸಿದ ಖಾಲಿ ಜಾಗದಲ್ಲಿ ಮಾತ್ರವೇ ಮಾಡಬೇಕು (ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾಡಬಾರದು).

6. ಒಂದು ನಿರ್ದಿಷ್ಟ ಪ್ರಶ್ನೆಗೆ ಒಂದಕ್ಕಿಂತ ಹೆಚ್ಚು ವೃತ್ತಾಕಾರವನ್ನು ಗುರುತಿಸಲಾಗಿದ್ದರೆ, ಅಂತಹ ಉತ್ತರವನ್ನು ತಪ್ಪು ಎಂದು ಪರಿಗಣಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಯಾವುದೇ ಅಂಕವನ್ನು ನೀಡಲಾಗುವುದಿಲ್ಲ. ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯಲ್ಲಿನ ಉದಾಹರಣೆ ನೋಡಿ.

7. ಅಭ್ಯರ್ಥಿ ಮತ್ತು ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರು ನಿರ್ದಿಷ್ಟಪಡಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯ ಮೇಲೆ ಸಹಿ ಮಾಡಬೇಕು.

8. ಅಭ್ಯರ್ಥಿಯ ಪರೀಕ್ಷೆಯ ನಂತರ ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಗೆ ಮೂಲ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಹಾಳೆ ಮತ್ತು ವಿಶ್ವವಿದ್ಯಾನಿಲಯದ ಪ್ರತಿಯನ್ನು ಹಿಂದಿರುಗಿಸಬೇಕು.

9. ಅಭ್ಯರ್ಥಿಯ ಪ್ರಶ್ನೆ ಪುಸ್ತಕವನ್ನು ಮತ್ತು ಓ.ಎಂ.ಆರ್. ಅಭ್ಯರ್ಥಿಯ ಪ್ರತಿಯನ್ನು ತಮ್ಮ ಜೊತೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.

10. ಕ್ಯಾಲ್ಕುಲೇಟರ್, ಪೇಜರ್ ಮತ್ತು ಮೊಬೈಲ್ ಫೋನ್‌ಗಳನ್ನು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಒಳಗೆ ಅನುಮತಿಸಲಾಗುವುದಿಲ್ಲ.

11. ಅಭ್ಯರ್ಥಿಯ ದುಷ್ಕೃತ್ಯದಲ್ಲಿ ತೊಡಗಿರುವುದು ಕಂಡುಬಂದರೆ, ಅಂತಹ ಅಭ್ಯರ್ಥಿಯನ್ನು ಕೋರ್ಸ್‌ಗೆ ಪರಿಗಣಿಸಲಾಗುವುದಿಲ್ಲ ಮತ್ತು ನಿಯಮಗಳ ಪ್ರಕಾರ ಇಂತಹ ಅಭ್ಯರ್ಥಿಯ ವಿರುದ್ಧ ಕ್ರಮ ಕೈಗೊಳ್ಳಲಾಗುವುದು.

ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯನ್ನು ತುಂಬಲು ಸೂಚನೆಗಳು

1. ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೆ ಒಂದೇ ಒಂದು ಅತ್ಯಂತ ಸೂಕ್ತವಾದ/ಸರಿಯಾದ ಉತ್ತರವಿರುತ್ತದೆ.

2. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಒಂದ ವೃತ್ತವನ್ನು ಮಾತ್ರ ನೀಲಿ ಅಥವಾ ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ನಿನಿಂದ ಮಾತ್ರ ತುಂಬತಕ್ಕದ್ದು. ಉತ್ತರವನ್ನು ಮಾರ್ಪಡಿಸಲು ಪ್ರಯತ್ನಿಸಬೇಡಿ.

3. ವೃತ್ತದೊಳಗಿರುವ ಅಕ್ಷರವು ಕಾಣದಿರುವಂತೆ ವೃತ್ತವನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ತುಂಬುವುದು.

4. ಓ.ಎಂ.ಆರ್. ಹಾಳೆಯಲ್ಲಿ ಯಾವುದೇ ಅನಾವಶ್ಯಕ ಗುರುತುಗಳನ್ನು ಮಾಡಬೇಡಿ.

Note : English version of the instructions is printed on the front cover of this booklet.