

[KZ 1011]

Sub. Code: 3007

**MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY
(MASLP) DEGREE EXAMINATION
FIRST YEAR**

**PAPER VII – AUDITORY PHYSIOLOGY
Q.P. Code : 433007**

**Time : 3 hours
(180 Min)**

Maximum : 100 marks

Answer ALL questions in the same order.

I. Elaborate on :

	Pages (Max.)	Time (Max.)	Marks (Max.)
1. With a neat diagram write an essay on anatomy and physiology of vestibular system.	17	40	20
2. Write about transformer action of Middle ear and its role in human hearing.	17	40	20

II. Write notes on :

1. Temporal bone and its importance.	4	10	6
2. Anatomy of External Ear.	4	10	6
3. Non acoustic reflex pathway and importance.	4	10	6
4. Draw human middle ear and label the parts.	4	10	6
5. Cochlear fluids and their properties.	4	10	6
6. Cochlear non-linearity.	4	10	6
7. Frequency theory.	4	10	6
8. Stimulus Coding in Auditory nerve.	4	10	6
9. Anatomy of IC and MGB.	4	10	6
10. Neurobiological relationship between auditory cortex and other areas.	4	10	6

[LB 1012]

OCTOBER 2012

Sub. Code: 3007

MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

(MASLP) DEGREE EXAMINATION

FIRST YEAR

PAPER VII – AUDITORY PHYSIOLOGY

Q.P. Code : 433007

Time : 3 hours
(180 Min)

Maximum : 100 marks

Answer ALL questions in the same order.

I. Elaborate on :

Pages Time Marks
(Max.)(Max.)(Max.)

- | | | | |
|--|----|----|----|
| 1. How improved knowledge of the anatomy of the cochlea influenced the development of theories of hearing? | 17 | 40 | 20 |
| 2. Explain the anatomy and function of the descending auditory pathway. | 17 | 40 | 20 |

II. Write Notes on :

- | | | | |
|---|---|----|---|
| 1. Muscles of middle ear. | 4 | 10 | 6 |
| 2. Supporting cells in the cochlea. | 4 | 10 | 6 |
| 3. Non-auditory reflex pathway. | 4 | 10 | 6 |
| 4. Characteristic features of physiologic tuning curve. | 4 | 10 | 6 |
| 5. Oto acoustic emissions. | 4 | 10 | 6 |
| 6. Cochlea is a non-linear transducer. Discuss. | 4 | 10 | 6 |
| 7. Write a short note on two tone suppression. | 4 | 10 | 6 |
| 8. Differences in composition of endolymph and perilymph. | 4 | 10 | 6 |
| 9. Basilar membrane. | 4 | 10 | 6 |
| 10. Cochlear microphonics. | 4 | 10 | 6 |

[LC 0413]

APRIL 2013

Sub. Code: 3007

MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

(MASLP) DEGREE EXAMINATION

FIRST YEAR

PAPER VII – AUDITORY PHYSIOLOGY

Q.P. Code : 433007

Time : 3 hours
(180 Min)

Maximum : 100 marks

I. Elaborate on:

(2x20=40)

1. Describe the innervations of the cochlea.
2. Using a diagram, describe the important anatomical features of the tympanic membrane. Discuss its role in hearing.

II. Write notes on :

(10X6=60)

1. Resting potentials in the cochlea.
2. Tonotopic organization in the auditory cortex.
3. Fluids in the cochlea.
4. Place volley theory.
5. Phylogeny of the middle ear.
6. Anatomical features of the medial wall of the middle ear.
7. Physiology of balance.
8. Travelling wave theory is a simplistic of explaining cochlear physiology. Discuss.
9. What is the role of the acoustic reflex in hearing?
10. Compare the outer hair cells with the inner hair cells.

[LD 1013]

OCTOBER 2013

Sub. Code: 3007

MASTER OF AUDIOLOGY AND SPEECH LANGUAGEPATHOLOGY

(MASLP) DEGREE EXAMINATION

FIRST YEAR

PAPER- VII AUDITORY PHYSIOLOGY

Q.P. Code: 433007

Time: Three hours

Maximum: 100 Marks

Answer All questions

I Elaborate on:

(2x20 =40)

1. Historical and current status on cochlear and basilar membrane mechanics.
2. Stimulus coding in terms of F0, intensity and duration at different levels of auditory pathway.

II. Write Short notes on:

(10 x 6 = 60)

1. Frequency coding at cortical level.
2. Two tests for central vestibular disorder.
3. Blood supply to cochlea and vestibular system.
4. Any one model of cochlea.
5. Developmental changes of external ear.
6. Functions of Eustachian tube and two methods to measure its functioning.
7. Transduction process in cochlea.
8. Vestibulo-ocular reflex.
9. Action potential with its measurement methods.
10. Structure of SOC and its importance in hearing.

[LF 1014]

OCTOBER 2014

Sub. Code: 3007

**MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY
(MASLP) DEGREE EXAMINATION
FIRST YEAR
(2010-2011 Session onwards)
PAPER VII - AUDITORY PHYSIOLOGY**

Q.P. Code: 433007

Time: Three hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Write an essay on anatomical and physiological changes across basal to apical end of cochlea.
2. Describe in detail about the function of vestibular system.

II. Write notes on:

(10 x 6 = 60)

1. Nonlinear cochlear function
2. Types of cells and their speech coding in Cochlear nuclei
3. Anatomy of temporal lobe
4. Anatomical differences between Outer hair Cells and Inner Hair Cell
5. Anatomical differences of External Auditory Canal and Eustachian Tube between children and adult.
6. Middle ear transfer function
7. Monotonous and non-monotonous auditory fibres
8. Function of Efferent auditory pathway
9. Compare the frequency coding at Lateral Lamniscus inferior collicullas
10. Function of Semicircular canal.

[LG 0415]

APRIL 2015

Sub. Code: 3007

**MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY
(MASLP) DEGREE EXAMINATION
FIRST YEAR
(2010-2011 Session onwards)
PAPER VII - AUDITORY PHYSIOLOGY**

Q.P. Code: 433007

Time: Three hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Write an essay on Place theories of hearing.
2. Write about role of Superior olivary complex in localisation function.

II. Write notes on:

(10 x 6 = 60)

1. Vestibular ocular reflex
2. Integration of different senses for balance
3. Compare frequency coding at Ventral cochlear nuclei and Dorsal cochlear nuclei.
4. Reissner's membrane
5. Compound Action Potential
6. Blood supply to cochlea
7. Non auditory pathway and its function
8. Refractory period
9. Frequency and intensity coding at auditory nerve
10. Cerebral plasticity

[LH 0415]

OCTOBER 2015

Sub. Code: 3007

MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY

(from 2010-2011 Session onwards)

FIRST YEAR

PAPER VII – AUDITORY PHYSIOLOGY

Q.P. Code : 433007

Time : Three hours

Maximum : 100 marks

I. Elaborate on:

(2 x 20 = 40)

1. Role of Superior olivary complex on binaural hearing.
2. Non linear function of cochlea.

II. Write notes on:

(10 x 6 = 60)

1. Non auditory function of external auditory canal.
2. Vestibular ocular reflex.
3. Middle ear transformer action.
4. Non auditory reflex pathway.
5. Summating potentials.
6. Tonotopic organization of auditory cortex.
7. Cortical plasticity.
8. Role of efferent auditory pathway.
9. Role of auditory cortex in localization.
10. Cochlear nucleus.

[LI 0416]

APRIL 2016

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Compare the stimulus coding at Cochlea nucleus, Inferior Colliculus and auditory cortex.
2. Role of Vestibular Ocular Reflex and Vestibular Spinal Reflex in balance function.

II. Write notes on:

(10 x 6 = 60)

1. Action potential generation.
2. Spontaneous firing rate.
3. Superior olivary complex.
4. Coding of complex stimulus in auditory nerve.
5. Bekesy theory.
6. Theories of bone conduction.
7. Resonance properties of external ear and auditory canal.
8. Physiology of Eustachian tube.
9. Cochlear blood supply.
10. Two tone suppression.

[LJ 1016]

OCTOBER 2016

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY EXAMS
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Critically evaluate the Travelling Wave theory.
2. Design a protocol for assessment and management of a child with Central Auditory processing disorders.

II. Write notes on:

(10 x 6 = 60)

1. Functions of middle ear transformer action.
2. Role of hearing in external ear.
3. Adaptation in auditory nerve.
4. Cochlear mobility.
5. Types of cells in auditory cortex.
6. Physiology of Eustachian tube.
7. Blood supply of Cochlea.
8. Significance of auditory Cortex in Localization.
9. Non auditory reflex pathway.
10. Role of Vestibular Spinal Reflex in balance function.

[LK 0517]

MAY 2017

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY EXAMS
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Anatomy and physiology of the cochlea.
2. Acoustical signal processing in the central auditory system.

II. Write notes on:

(10 x 6 = 60)

1. Describe – structures and functions of the vestibular nerve.
2. Proteins in the cochlea.
3. Vestibule ocular reflex.
4. Anatomy of lateral lemniscus.
5. Role of auditory cortex in localization.
6. Development of the auditory system.
7. Neurobiological relationship between auditory cortex and other areas.
8. Temporal bone anatomy–role in hearing.
9. Refractory period-auditory nerve.
10. Blood supply to cochlea.

[LL 1017]

OCTOBER 2017

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY EXAMS
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain Brain Plasticity and neurobiological relationship between auditory cortex and other areas of Neural Plasticity.
2. Mechanism of Localization at each level of auditory system.

II. Write notes on:

(10 x 6 = 60)

1. Explain in detail the anatomy of vestibular system.
2. Hair cell repair and regeneration.
3. Cochlear fluids.
4. Explain the process of Electro-motility in Cochlea.
5. Refractory period and adaptation in auditory nerve.
6. Acoustic and non-acoustic function of external ear.
7. Stimulus coding in Cochlear Nucleus.
8. Neuro transmitters in auditory system.
9. Difference between Cochlear and Vestibular Hair cells.
10. Endo cochlear potentials.

[LM 0518]

MAY 2018

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY EXAMS
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Elaborate on the anatomical and physiological changes across cochlea from basal to apical end.
2. Stimulus coding, frequency, intensity, duration of complex signals, speech at different levels of auditory pathway.

II. Write notes on:

(10 x 6 = 60)

1. Anatomy of vestibular system.
2. Importance of efferent pathway.
3. Modes of bone conduction.
4. Area and lever ratio in middle ear function.
5. Frequency theory on hearing.
6. Importance of integration of various senses for balance.
7. Neurotransmitters and its importance in stimulus coding.
8. Types of cells in auditory cortex.
9. Anatomical differences in Eustachian tube and external ear in children and adults.
10. Developmental changes in external ear.

[LN 1018]

OCTOBER 2018

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY EXAMS
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain the anatomical and functional characteristics of the human auditory cortex.
2. Explain how the middle ear serves as both an impedance matching device and, in some cases, a “surge protector”?

II. Write notes on:

(10 x 6 = 60)

1. Sensory Transduction in Hair Cells.
2. Electrical Potentials in the Cochlea.
3. Anatomical Organization of the Ascending Auditory Pathway.
4. Tonotopic Organization.
5. Mechanical Properties of the Basilar Membrane.
6. Inhibition.
7. Physiology of localization of sounds.
8. Middle Ear Muscle Reflex.
9. Cochlear fluids.
10. Equilibrium pathways.

[LO 0519]

MAY 2019

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY EXAMS
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Cite with literature support the view that the auditory system is plastic.
2. Compare and contrast the various theories of hearing.

II. Write notes on:

(10 x 6 = 60)

1. What is tonotopicity? How is it maintained across the auditory system?
2. Role of the efferent system in audition.
3. Physiology of the balance system.
4. Function of auditory cortex in localization.
5. Neurotransmitters in the auditory system.
6. Different types of cells in the Cochlear Nucleus Complex (CNC).
7. Physiological properties of the auditory nerve.
8. Modes of bone conduction of sound stimuli.
9. Developmental changes of the external ear.
10. Non classical auditory pathways.

[LP 1019]

OCTOBER 2019

Sub. Code: 3007

**MASTER OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY EXAMS
FIRST YEAR
PAPER VII – AUDITORY PHYSIOLOGY**

Q.P. Code : 433007

Time : Three hours

Maximum : 100 Marks

I. Elaborate on: **(2 x 20 = 40)**

1. Relationship between auditory cortex and related areas in the brain.
2. Various cells in the Cochlear Nucleus Complex (CNC) and its properties.

II. Write notes on: **(10 x 6 = 60)**

1. Various reflexes of the vestibular system.
2. Role of middle ear in sound transduction.
3. Origin, composition, dynamics and function of cochlear fluids.
4. Generations of Oto Acoustic Emissions (OAEs).
5. Proteins of cochlea and their role.
6. Role of pinna in localization. Describe the Head Related Transfer Function (HRTF).
7. Importance of the efferent auditory system for speech perception in noise.
8. Stimulus in coding in Inferior Colliculus.
9. Acoustic and non acoustic reflex.
10. Structure and organization of the auditory nerve.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0321]

MARCH 2021

Sub. Code: 3007

(OCTOBER 2020 EXAM SESSION)

MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

FIRST YEAR (From 2010-2011 onwards)

PAPER VII – AUDITORY PHYSIOLOGY

Q.P. Code : 433007

Time : Three hours

Answer ALL Questions

Maximum : 100 Marks

I. Elaborate on :

(2x20=40)

1. Various models of bone conduction in hearing.
2. Role of Superior Olivary Complex on binaural hearing.

II. Write notes on :

(10x6=60)

1. Acoustic reflex pathway.
2. Repair, regeneration, protection in the cochlea.
3. Cochlear potentials.
4. Vestibule spinal reflex.
5. Anatomy of LL, IC.
6. Neurobiological relationship between auditory cortex and other areas.
7. Frequency theory.
8. Role of pinna in humans.
9. Non classical pathways.
10. Spontaneous firing rate.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0921]

**SEPTEMBER 2021
(MAY 2021 EXAM SESSION)**

Sub. Code: 3007

**MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY
FIRST YEAR (From 2010-2011 onwards)
PAPER VII – AUDITORY PHYSIOLOGY
*Q.P. Code : 433007***

Time : Three hours

Answer ALL Questions

Maximum : 100 Marks

I. Elaborate on :

(2x20=40)

1. Middle ear transformer action with relevant literature.
2. Stimulus coding at various levels of auditory pathway.

II. Write notes on :

(10x6=60)

1. Temporal bone anatomy with its role in hearing.
2. Cochlear fluids.
3. Place theory.
4. Importance of neurotransmitters in auditory system.
5. Functions of efferent auditory pathway.
6. Vestibular ocular reflex.
7. Cochlear plasticity and its relevance to hearing.
8. Blood supply to cochlea.
9. Auditory adaptation.
10. Anatomy of MGB.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0222]

**FEBRUARY 2022
(OCTOBER 2021 EXAM SESSION)**

Sub. Code: 3007

**MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY
FIRST YEAR (From 2010-2011 onwards)
PAPER VII – AUDITORY PHYSIOLOGY
Q.P. Code : 433007**

Time : Three hours

Answer ALL Questions

Maximum : 100 Marks

I. Elaborate on :

(2x20=40)

1. Macro and Micro anatomy of cochlea in humans.
2. Mechanism of localization at various levels of auditory system.

II. Write notes on :

(10x6=60)

1. Structure and contents of Internal auditory meatus.
2. Types of cells and its distribution function at cochlear nucleus.
3. Travelling Wave theory.
4. Physiology of Eustachian tube.
5. Resonance properties of external ear and auditory canal.
6. Blood supply to cochlea.
7. Tonotopic organizations at cortical level.
8. Anatomy of vestibular nerve
9. Current status on basilar membrane mechanics
10. Middle ear lever action function.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0522]

MAY 2022

Sub. Code: 3007

MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY

FIRST YEAR (From 2010-2011 onwards)

PAPER VII – AUDITORY PHYSIOLOGY

Q.P. Code: 433007

Time : Three hours

Answer ALL Questions

Maximum : 100 Marks

I. Elaborate on:

(2x20=40)

1. Critically evaluate the various Theories of hearing.
2. Anatomy and physiology of the vestibular structures and vestibular nerve.

II. Write notes on:

(10x6=60)

1. Superior Olivary Complex.
2. Role of efferent auditory pathway.
3. Neurobiological relationship between auditory cortex and other areas.
4. Temporal bone anatomy.
5. Summating potential and action potential.
6. Anatomy of IC and MGB.
7. Cortical plasticity.
8. Supporting cells in the cochlea.
9. Anatomy and Physiology of Eustachian Tube.
10. Refractory period and Adaptation in auditory nerve.
