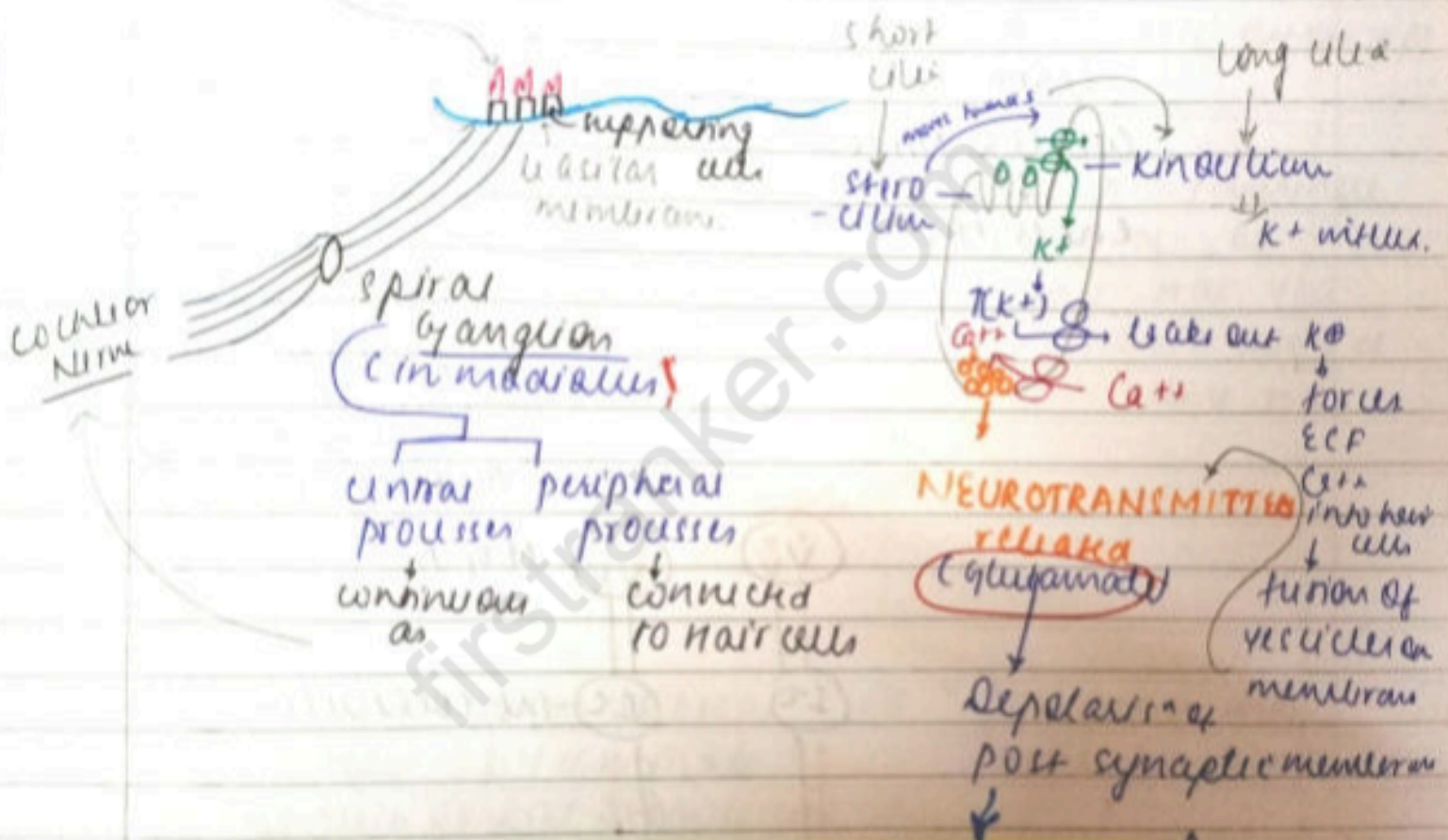


$f = 0.014$

Receptors: Hair cells in organ of Corti



→ Receptor Potensial / contoh microphone potensial -



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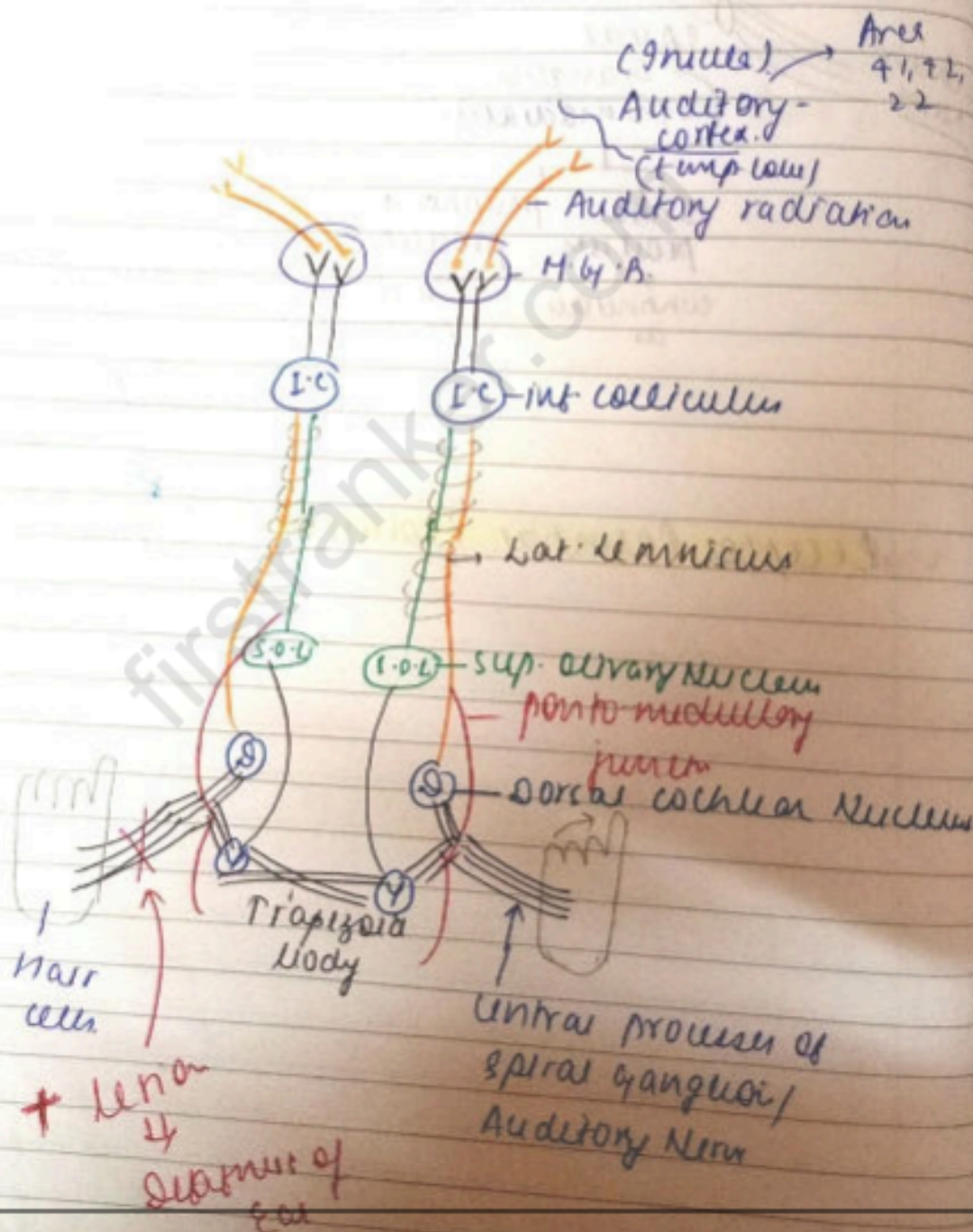
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Central process

leave as
Cochlear Nerve.
enter M.O

Peripheral process

distributed around hair
cells of organ of Corti as
afferent N. fibers.



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Cochlear Nucleus in M.O. form 2nd order neuron of auditory pathway.

Axon - run in 4 diff. directions

① Fibres cross the midline & run to opp. side

form

Trapezoid body

Fibres go to

superior Olivary Nucleus

② 1st group - terminate at S.O.N. of same side via

Trapezoid body of same side.

③ 1st grp. Fibres run in lateral Lemniscus & terminate in nucleus of Lat. Lemniscus of same side

④ 1st grp. Fibres run into reticular form across midline as

9 immediate Trapezoid Fibres

3rd Order Neuron -

↳ are in superior Olivary Nucleus & Nucleus of Lat. Lemniscus

ends in

Medial Geniculate body
(form subcortical Auditory centre)

same fibre
inf. column
in midbrain

Auditory Radiation
(via internal capsule)

Cortical Auditory Area
(41, 42, 22)

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DEAFNESS

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(i) CONDUCTION DEAFNESS

- * type of deafness due to impairment in transmission of sound to external ear/middle ear.
- * no N_v is damaged
- * Bone conduction > Air conduction

CAUSES:

- i) Obstruction of external auditory meatus due to any wax / foreign bodies.
- ii) Thickening of tympanic membrane due to repeated middle ear infection.
- iii) Perforation of tympanic membrane due to infection on either side.
- iv) Otitis media - inflammation of middle ear.
- v) Otosclerosis - fixation of footplate of stapes against oval window.

(ii) NERVE DEAFNESS

- * Deafness caused by damage to any structure in cochlea like:
 - i) hair cell,
 - ii) organ of Corti,
 - iii) basilar membrane
 - iv) cochlear duct
 - v) lesion in auditory pathway

CAUSES:-

- i) Degeneration of hair cell due to antibiotics (ototoxic drugs) like streptomycin.
- ii) Damage to cochlea due to prolonged exposure to loud sound.
- iii) Tumour affecting CN-8.

(i) RINNE TEST

(i) Normal

(ii) Conduction

(iii) Nerve



① RINNE TEST:-

Base of vibrating tuning fork placed on mastoid process of auricle until subject feels vibration
↳ not heard

↓
Tuning fork held in air in front of ear of same side

② Normal Person:- hears vibration in air even after bone conduction ceases.
↳ A.C. > B.C.
via ossicles

③ Conduction Deafness: B.C. > A.C.
↳ vibrations are not heard after cessation of bone conduction.

④ Nerve Deafness:- A.C. ↓ B.C. ↓



Base of vibrating tuning fork is placed on vertex of skull / middle of forehead.

→ Normal person - hears the sound equally on both sides.

→ Unilateral Conduction Deafness -
(deafness in 1 ear)

↓
sound is heard louder in diseased ear.

Unaffected ear [masking effect of env. noise.
∴ sound through B.C ≠ heard as clearly as on affected side.

→ Unilateral Nerve Deafness ↓

sound is heard normal louder in normal ear.

TASTE BUDS

Sense organs for taste/gustatory sensation are Taste buds

↓
oval buds
50-70 μ m diameter

* SITUATION OF TASTE BUDS:-

- on papillae of tongue.
- mucosa of palate, epiglottis, pharynx & proximal part of oesophagus.

Ans 1/10 { ① Filiform papillae - conical shape.
↓ no. of taste buds

② Fungiform papillae - round shape.
↓ modulates no. of taste buds.

Ans 1/3 { ③ Circumvallate papillae - large size.
↓ many taste buds (~100).
↓ arranged in shape 'V'.

* STRUCTURE OF TASTE BUDS:-

↓
bundle of taste receptor cells with supporting cells embedded in epithelial covering of papilla.

- Taste buds ~ 40 cells.
↓ modified epithelial cells.

- ① Type I / sustentacular cells
- ② Type II - function unknown
- ③ Type III - receptor cell
- ④ Type IV / basal cell

supporting cells.

- Type I, II, III cells have microvilli which project through an opening on dorsum of tongue called taste pore.
- All cells of taste buds are surrounded by

- epithelial cells
- tight junctions present b/w epithelial cells & rest portion of type I, II, III cells.
- only tip of these cells are exposed to blood in oral cavity.



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receptor organ for hearing
• 2nd largest neuroepithelial structure in cochlea

- situated on basilar membrane
- extends from apex → base of cochlea
∴ spiral shape.
- contains highly specialised auditory receptor -

HAIR CELLS

processes pierce tough membranous like

reticular lamina -

↳ supported by pillar cells / rod cells of cochlea

arranged in 2 rows

(i) Outer hair cells - 3 rows

(ii) • 20,000

(iii) → nr lateral to the tunnel formed by rods of cochlea

(iv) • tips are embedded in reticular membrane

• thin, viscous elastic membrane

(v) 5-10% of sensory neurons innervate

↳ most of the afferent neurons/fibres in auditory nerve terminate here.

Inner hair cells - 1 row

• 3500

↳ nr medial to tunnel

• tips are embedded in TM

• 90-95% of sensory neurons innervate

* (iii) location of sensory neurons that innervate



around hair cell - located in spiral ganglion
within nodules
longer are around
which cochlea is wound,
form auditory (hearing)
nerves (CN-8)