

SCALP

• Soft tissue covering the vault of skull

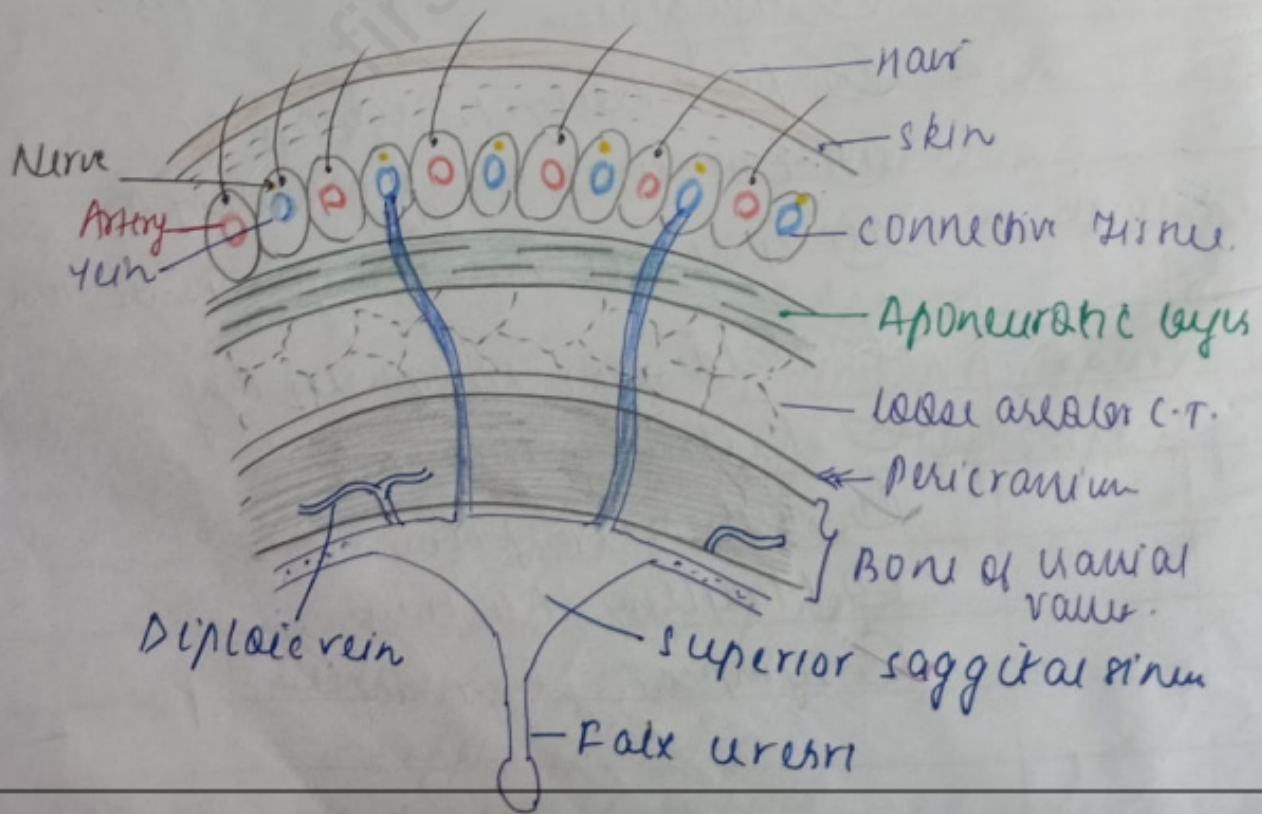
Boundaries:

- ① Ant - superciliary Arch of Frontal bone.
- ② Post - superior nuchal lines of occipital bone
- ③ Each side superior Temporal line.

LAYERS OF SCALP:

5 layers from superficial → Deep.

- S** - skin
- C** - connective tissue.
- A** - Aponeuroses (epicranial aponeurosis).
- L** - Loose areolar tissue.
- P** - Pericranium (outer perosteum)



+ ① Wounds of scalp bleed profusely :- because :-
i) Wall of torn vessels fail to retract because they are adhered to dense c.t.
ii) It is profusely supplied with blood (10 A. anastomose with each other in an arc side)

② Wounds of scalp heal quickly because

③ Scalp is the commonest site of saccharous cysts :- because it contains max no. of saccharous glands as compared to anywhere else in the body.
damage by cancer.

④ DANGEROUS LAYER OF SCALP :- 4th layer

↳ The layer of loose areolar tissue.

∴ if pus collects here, the infection may travel from this layer through emissary veins into intracranial dural venous sinuses, causing their thrombosis & associated meningitis.

⑤ Black Eye :- Blow on head.

Bleeding in 3rd layer (loose areolar)

↳ beneath epicranial

aponeurosis & its associated m/s - Frontal & Occipital belly of O.C.F. or Galeal Aponeurosis

Attachments

post sup nuchal line

lat-zygomatic arch.

ant - ≠ many

Attachment.

merge with skin &

Subcutaneous tissue of eyebrows & nose

ARTERIAL SUPPLY

VENOUS DRAINAGE

Each lateral 1/2 of scalp is supplied by 5 arteries & vein.

3 in front of auricle

- ①
- ②
- ③

① Supratrochlear vein

② supraorbital vein

③ superficial temporal v.

Trigeminal N.

2 behind auricle

- ①
- ②

① Posterior auricular v.

② Occipital vein.

NERVE SUPPLY:-

Sensory: Each lateral 1/2 of scalp is supplied by 10 Nerves.

5 in front of auricle

- ①
- ②
- ③
- ④
- ⑤

5 behind the auricle

- ① C₂, C₃
- ② C₂, C₃
- ③ C₂
- ④ C₂
- ⑤ C₃

CERVICAL PLEXUS
Branch

Motor:-

Each lateral 1/2 of scalp is supplied by 2 nerves.

① in front of auricle &

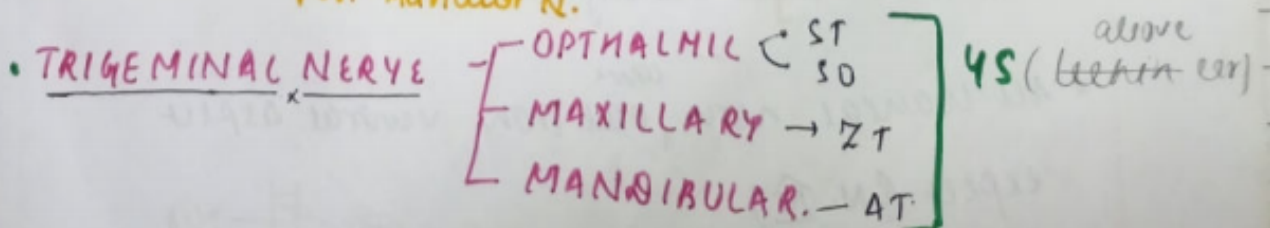
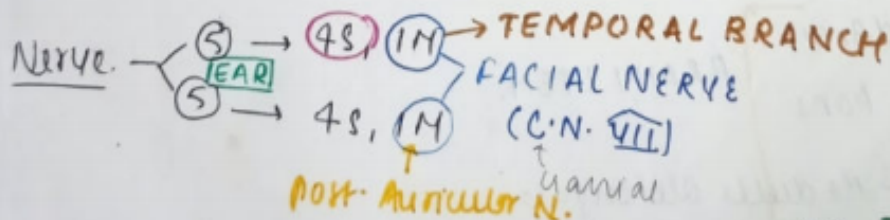
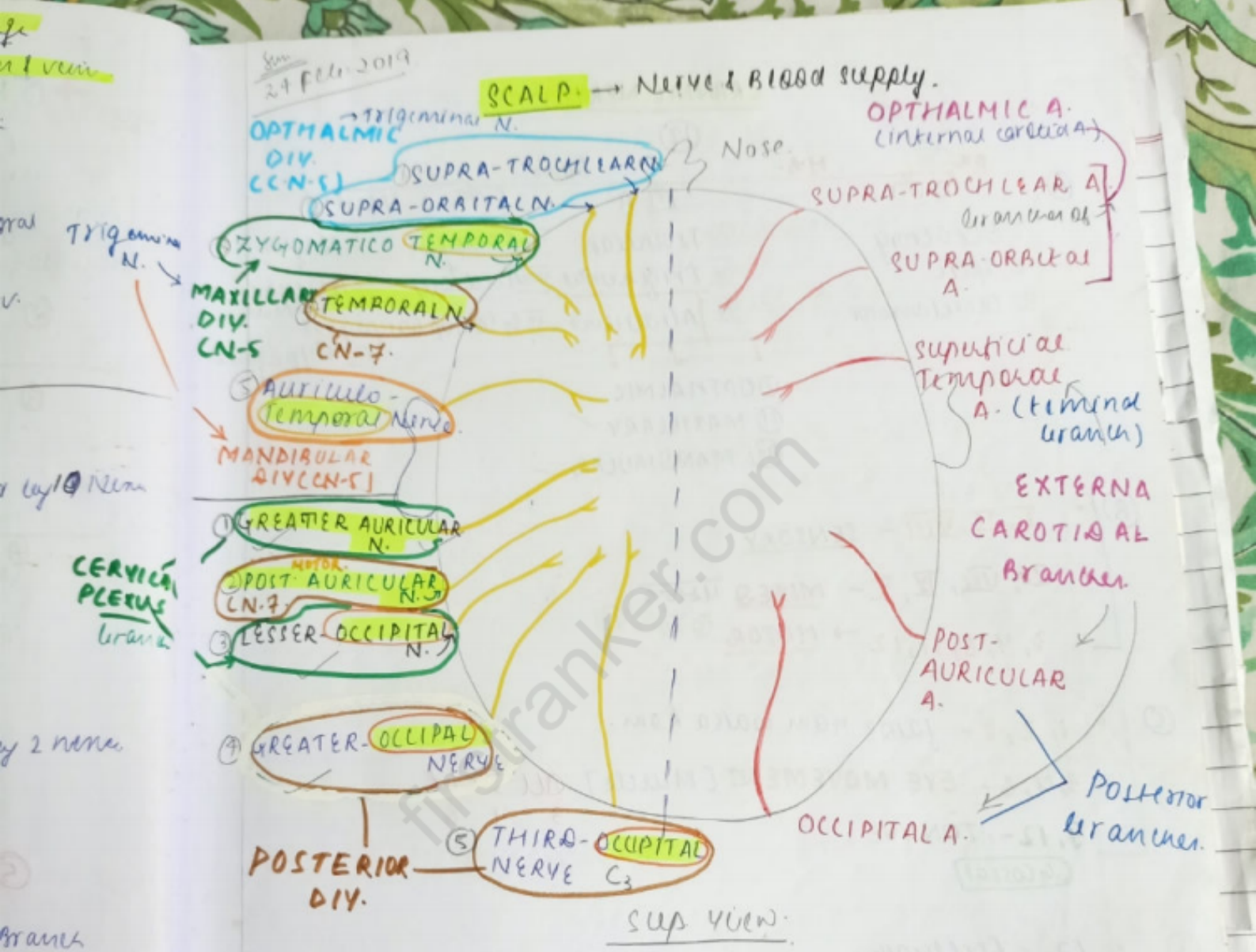
② behind the auricle.

Front of Auricle

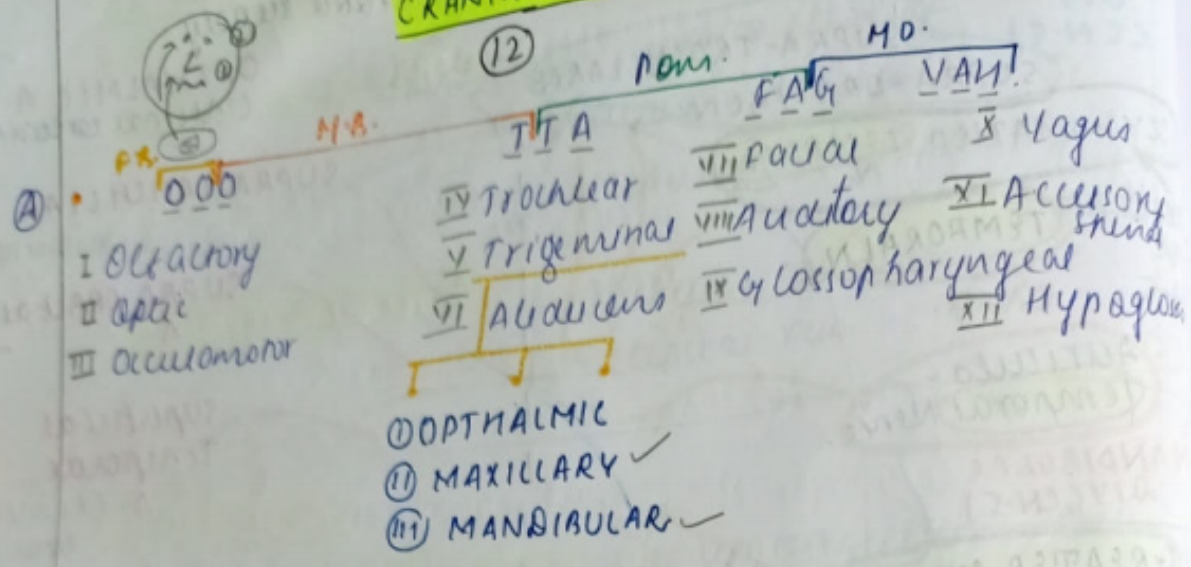
① Temporal Br of Facial N.

Behind the auricle

① post-auricular Branch of Facial N.



CRANIAL NERVE



- ④
- I, II, VIII - SENSORY
 - IX, X, XI, XII - MIXED 4256
 - 3, 4, 6, 11, 12 → MOTOR

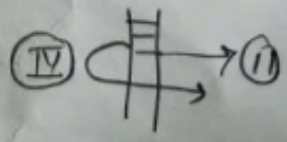
- ⑤
- 1, 2, 8 - jaiso nam waisa kam.
 - 3, 4, 6 - EYE MOVEMENT [Muscle] 3 4 6
 - 9, 12 - TONGUE [Glossal]

- ⑥
- 1, 2 - Forebrain.
 - 3, 4 - Midbrain.
 - 5, 6, 7, 8 - Pons.
 - 9, 10, 11, 12 - Medulla oblongata

BRAIN STEM.

* All cranial nerve ^{come} out from ventral aspect except (CN. II)

↳ come out dorsally & then wind around to reach ventrally.



Wed 27/03/2019

TRIGEMINAL NERVE (CN-5)

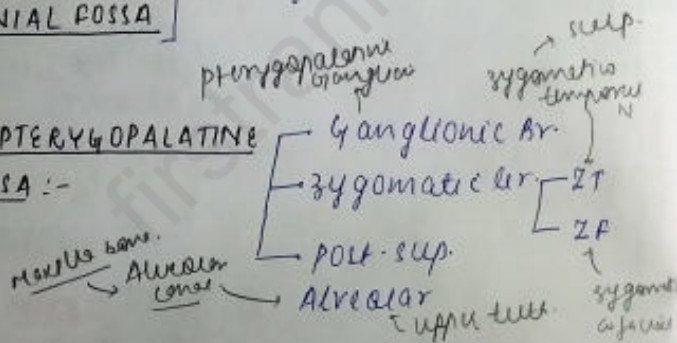
↳ Maxillary division

↳ sensory

↳ MAXILLARY DIVISION - 4 parts
↳ comes from Foramen Rotundum

① IN MIDDLE CRANIAL FOSSA] meningeal branch.

② IN PTERYGOPALATINE FOSSA :-



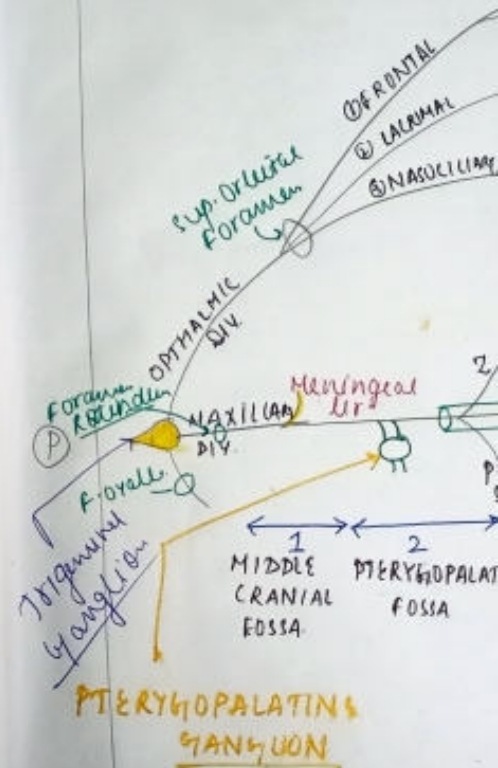
③ IN INFRAORBITAL CANAL

④ ON FACE :-

palpebral - eye

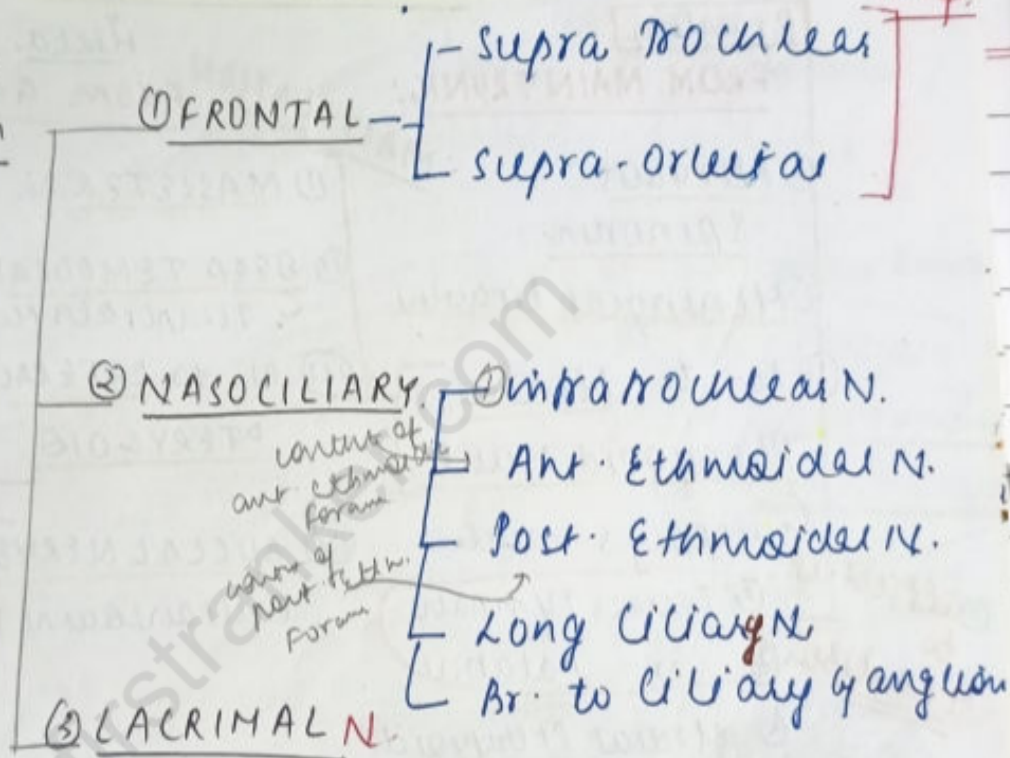
Lateral - upper lip

Nasal

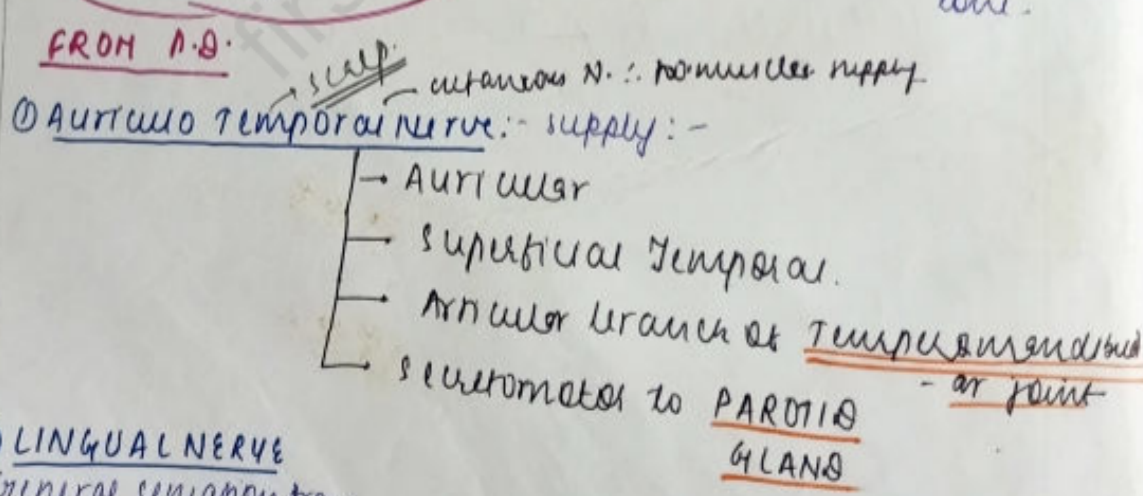
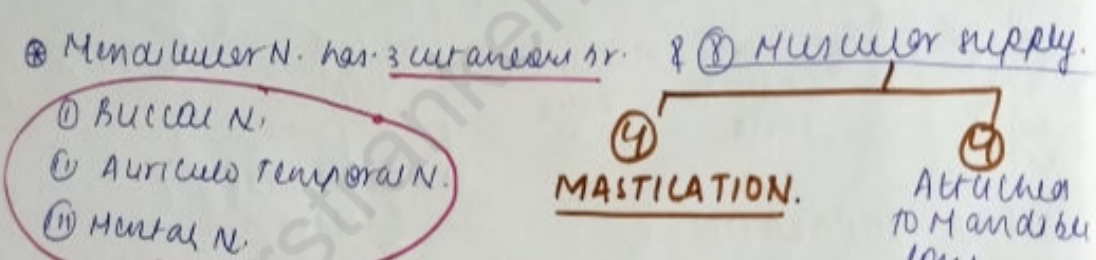
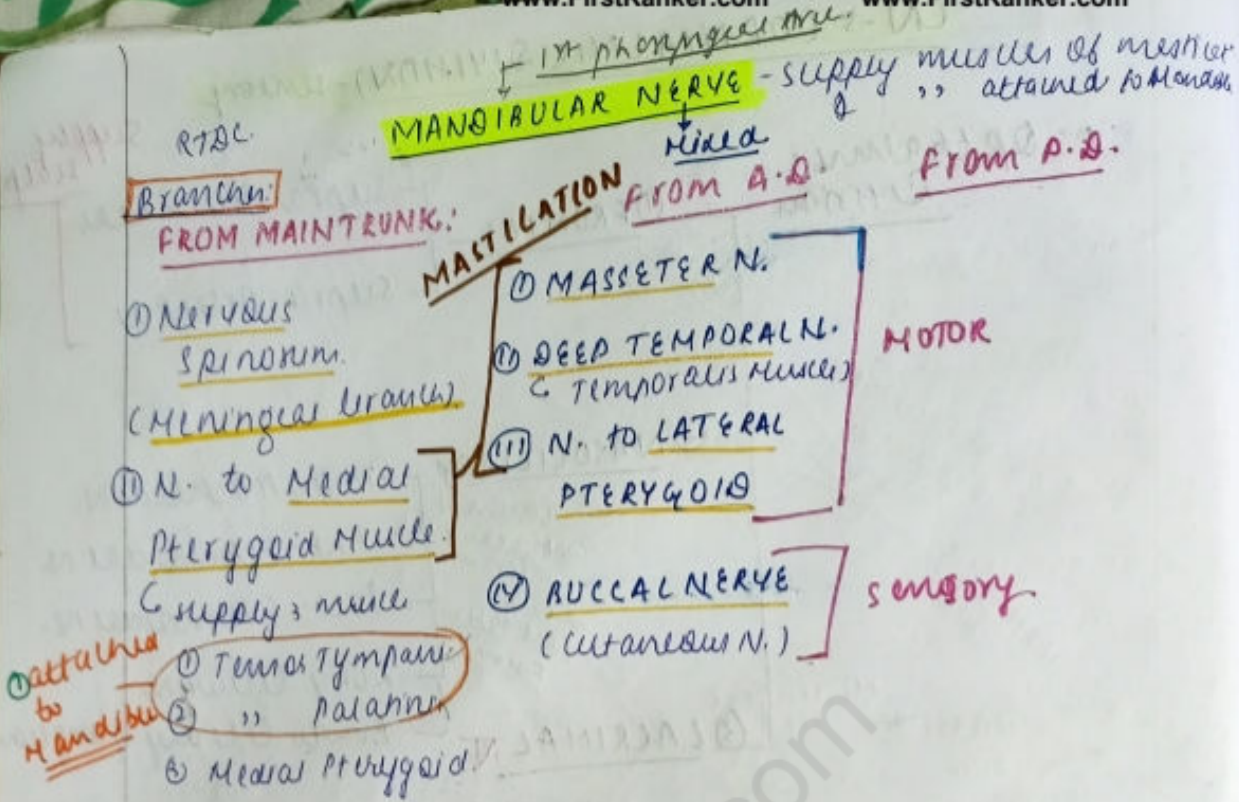


CN-5 (OPHTHALMIC DIVISION) - sensory

* Ophthalmic Division



24 Feb 2019, Mon



⑱ **LINGUAL NERVE**
(General sensation from Ant. 2/3rd of tongue)

⑲ **INFERIOR ALVEOLAR N.** - supply lower teeth

MYLOHYOID MUSCLE - Mental Branch → skin of chin

ANT. BELLY OF DIGASTRIC - N. to Mylohyoid

⑳ Attached to Mandible

① **AURICULAR TEMPORAL**

→ Otic Ganglion

n. supply to Parotid gland.

All N. of post. div. are sensory except ①

26 Feb 2019 7:00.

MAIN TRUNK

SENSORY.

① N. to spinous

MOTOR.

② N. to ~~Muscles~~ ^{Pharynx} ~~Mylohyoid~~

- TT.
- TP
- Med.

Muscles → MOTOR.

A.D. MOTOR.

① Meseter

② Deep Temporal

③ N. to lateral Pterygoid

④ Buccal N.

Sensory.

FACIAL MUSCLES

① SCALP - ^{Mandibular N.} Occipito frontalis { Frontal' belly
Occipital belly

② EAR (auricles) - 1. Auricularis Anterior } vestibular
2. Auricularis superior }
3. Auricularis post. } TEMPORAL Artery

③ EYE - 1. Orbicularis oculi { upper part palpebral part
lower part zygomatic Ar.
2. Corrugator super cili

③. Levator palpebrae superioris - CN-3. (LPS)

④ NOSE - 1. Procerus.
2. Compressor naris.
3. Dilator nares.
4. Depressor septi

Upper Buccal Nerve

① LPS - No supply of extra ocular muscles.
AU 50 LR - Lateral Rectus.
CN-3 (-4) - ⑥ CN. ⑦
superior oblique
②

⑤ MOUTH.

UPPER Buccal N.

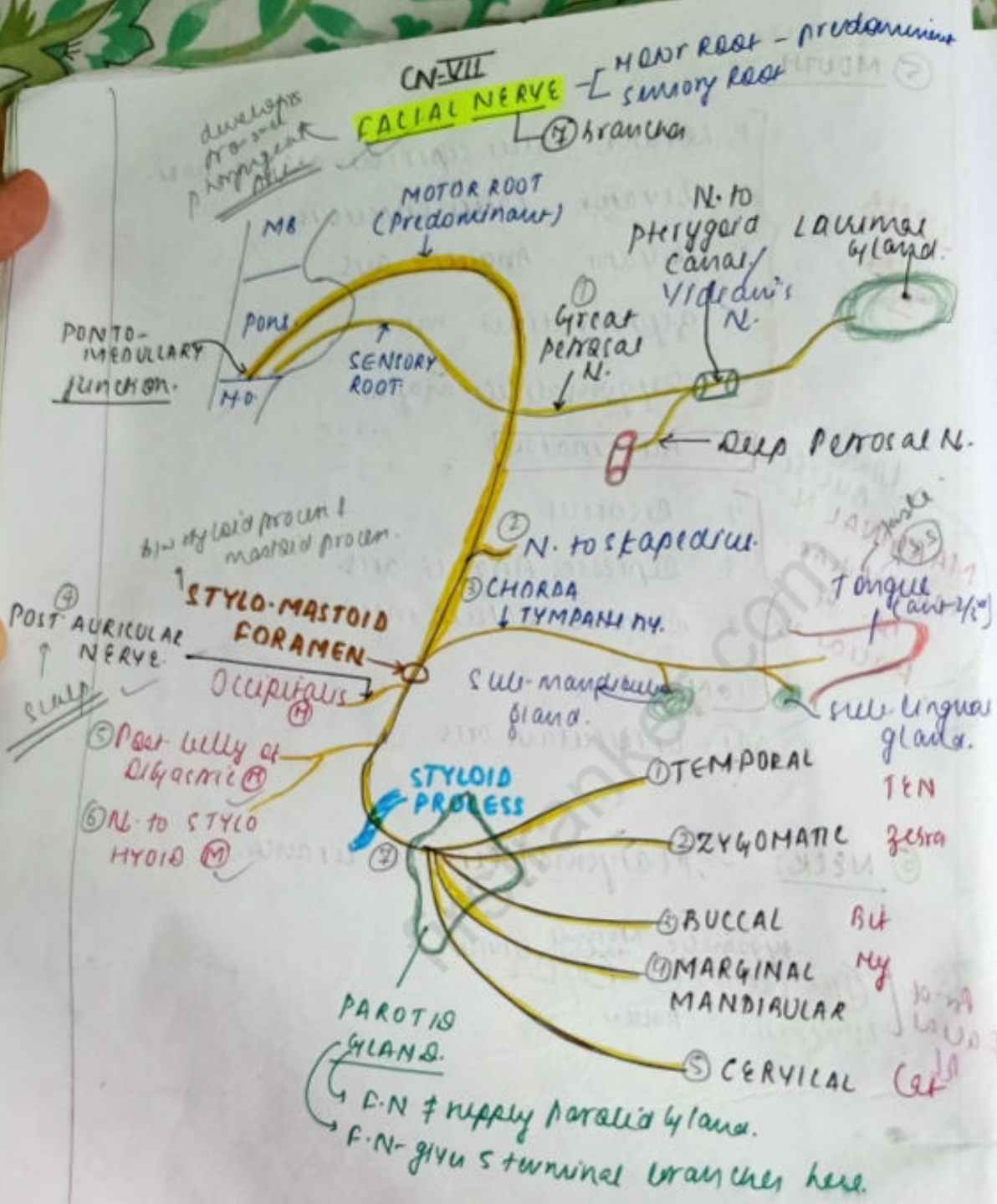
1. Levator labii
2. Levator labii
3. Levator anguli
4. Zygomaticus
5. Zygomaticus

Lower Buccal N.
MARGINAL N.
MANDIBULAR
Ar. of
FAUCIAL N.

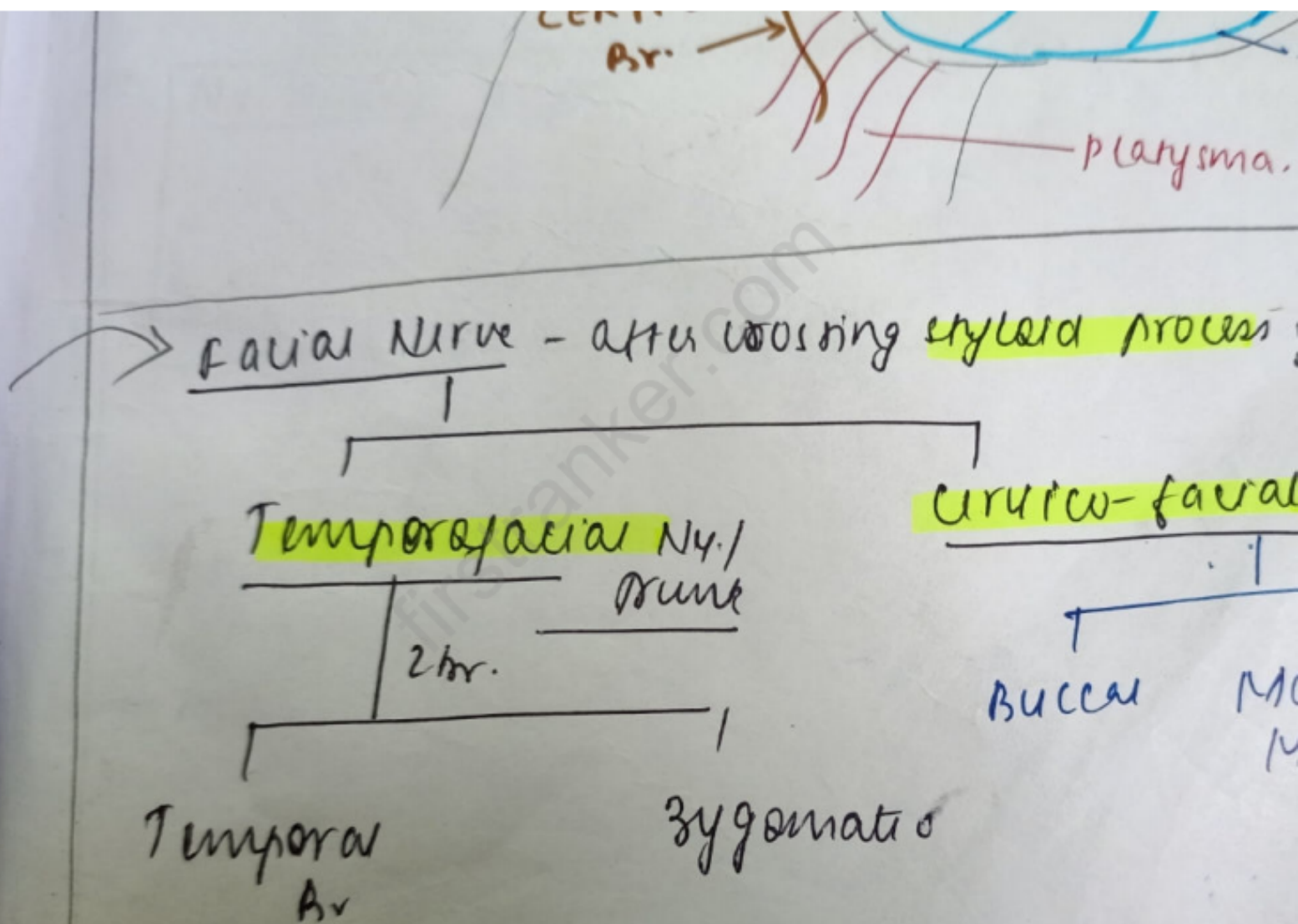
- ⑥ Buccinator
7. Risorius
8. Depressor Anguli
9. Depressor Labii
10. Mentalis
- ⑪ Orbicularis

⑥ NECK: - Platysma

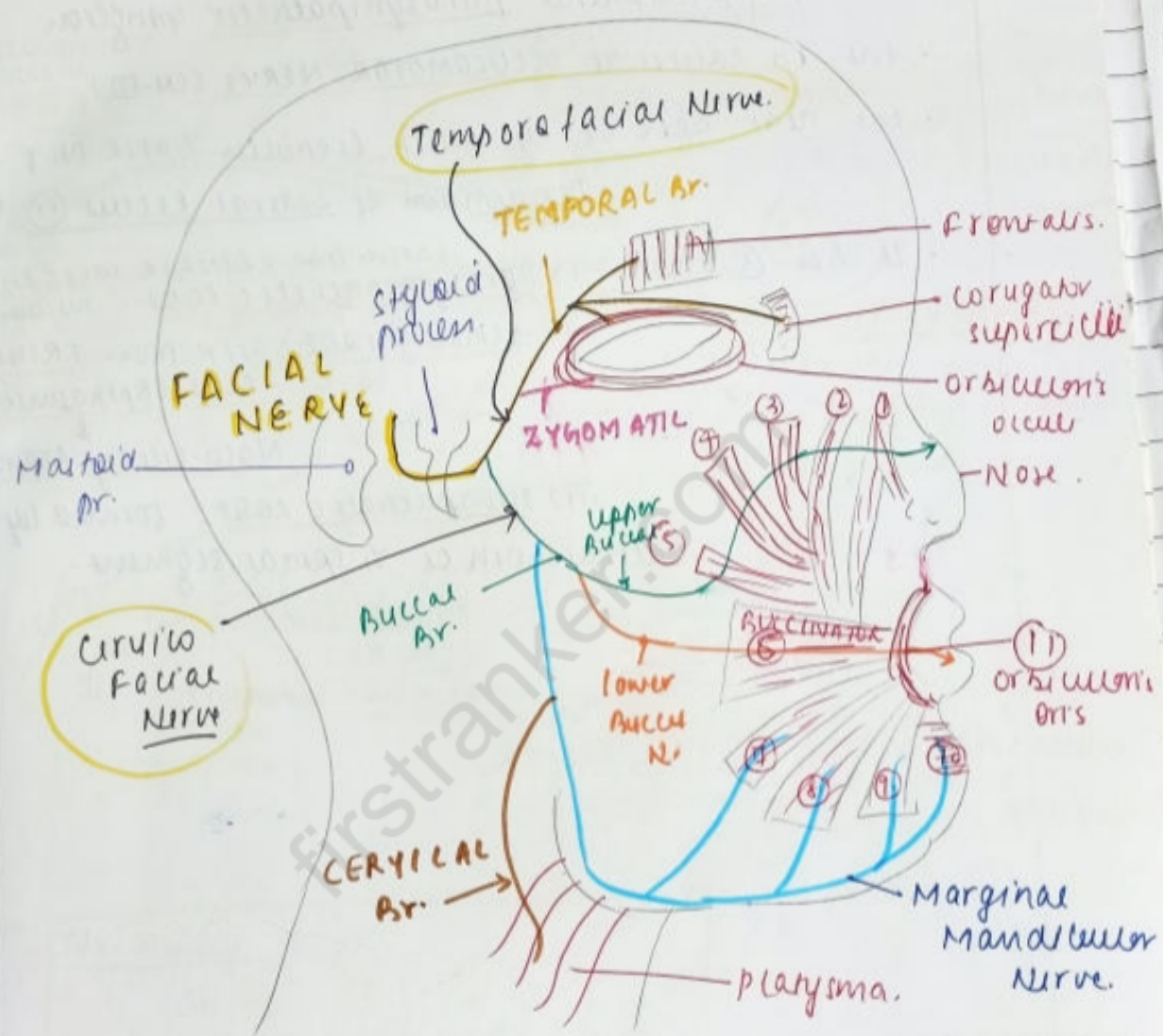
zygomatic Nerve
Ar. of [Zygomatic Nerve] (Zygomatic Nerve)
FACIAL Ar. [Zygomatic Nerve] (Zygomatic Nerve)
Temporal Ar. [Zygomatic Nerve] (Zygomatic Nerve)



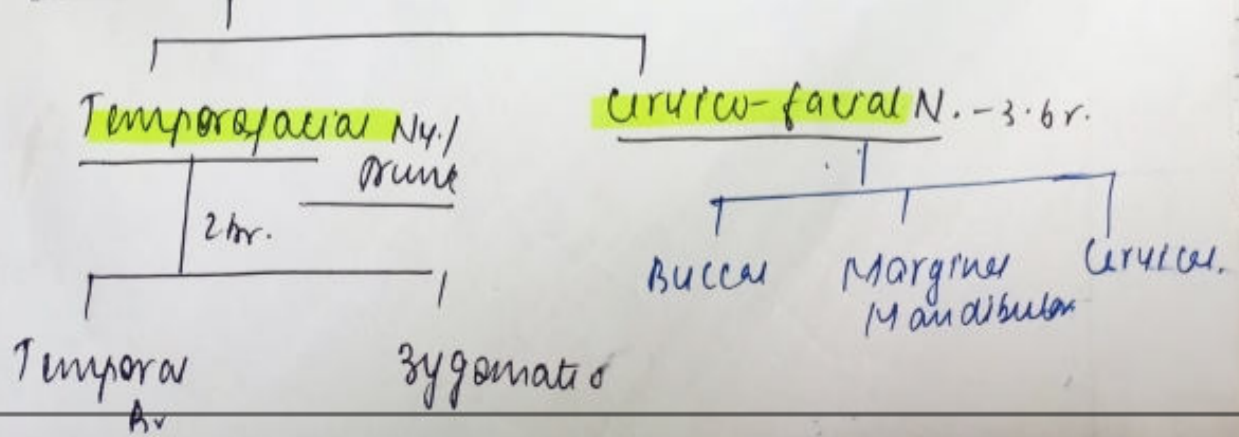
+ Bell's palsy



FACIAL MUSCLES & FACIAL NERVE (Extra Cranial course)



→ Facial Nerve - after crossing styloid process gives 2 br.

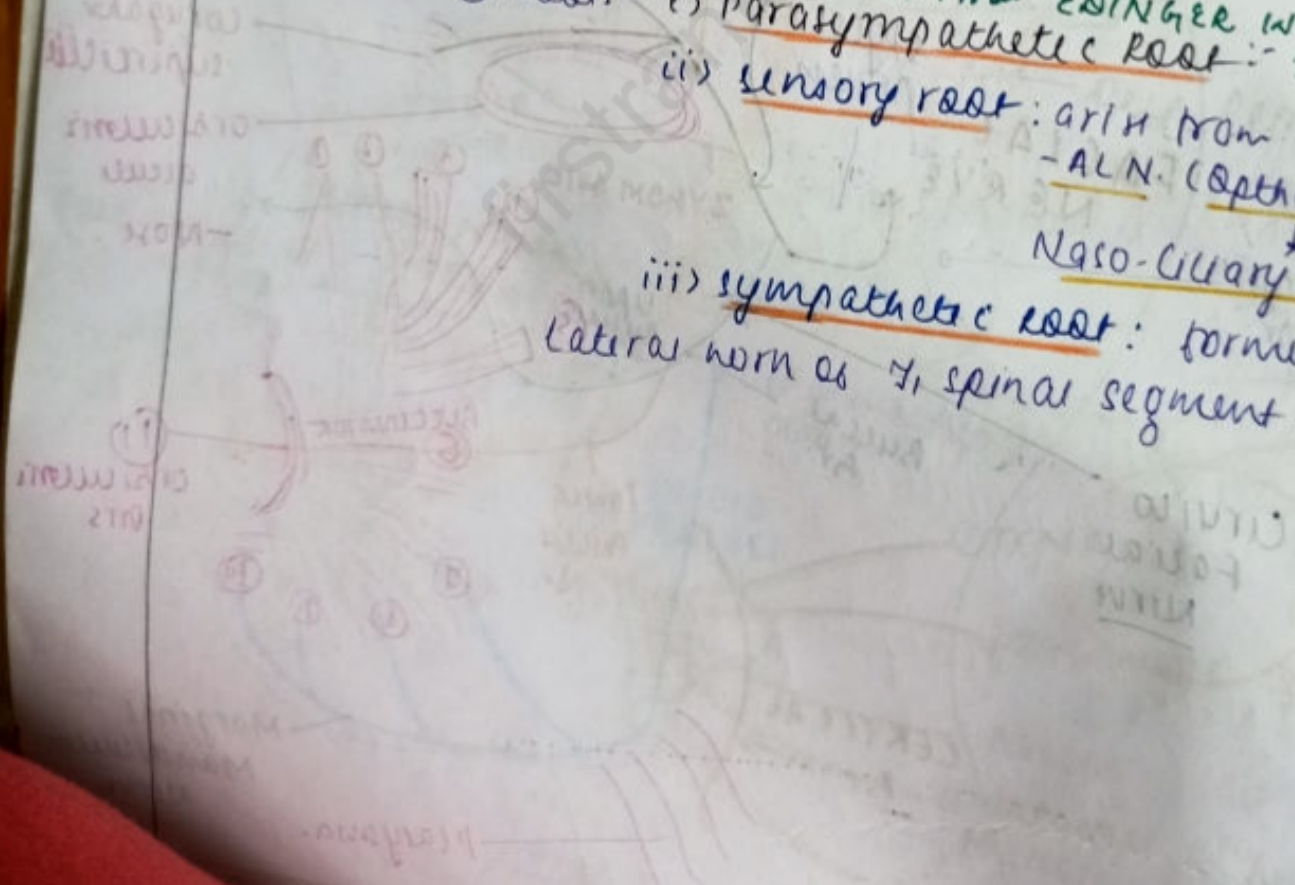


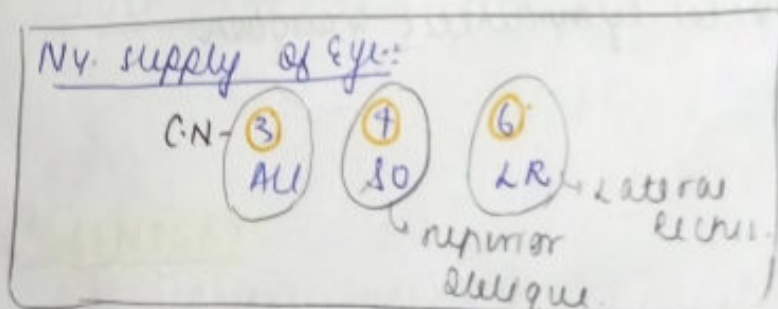
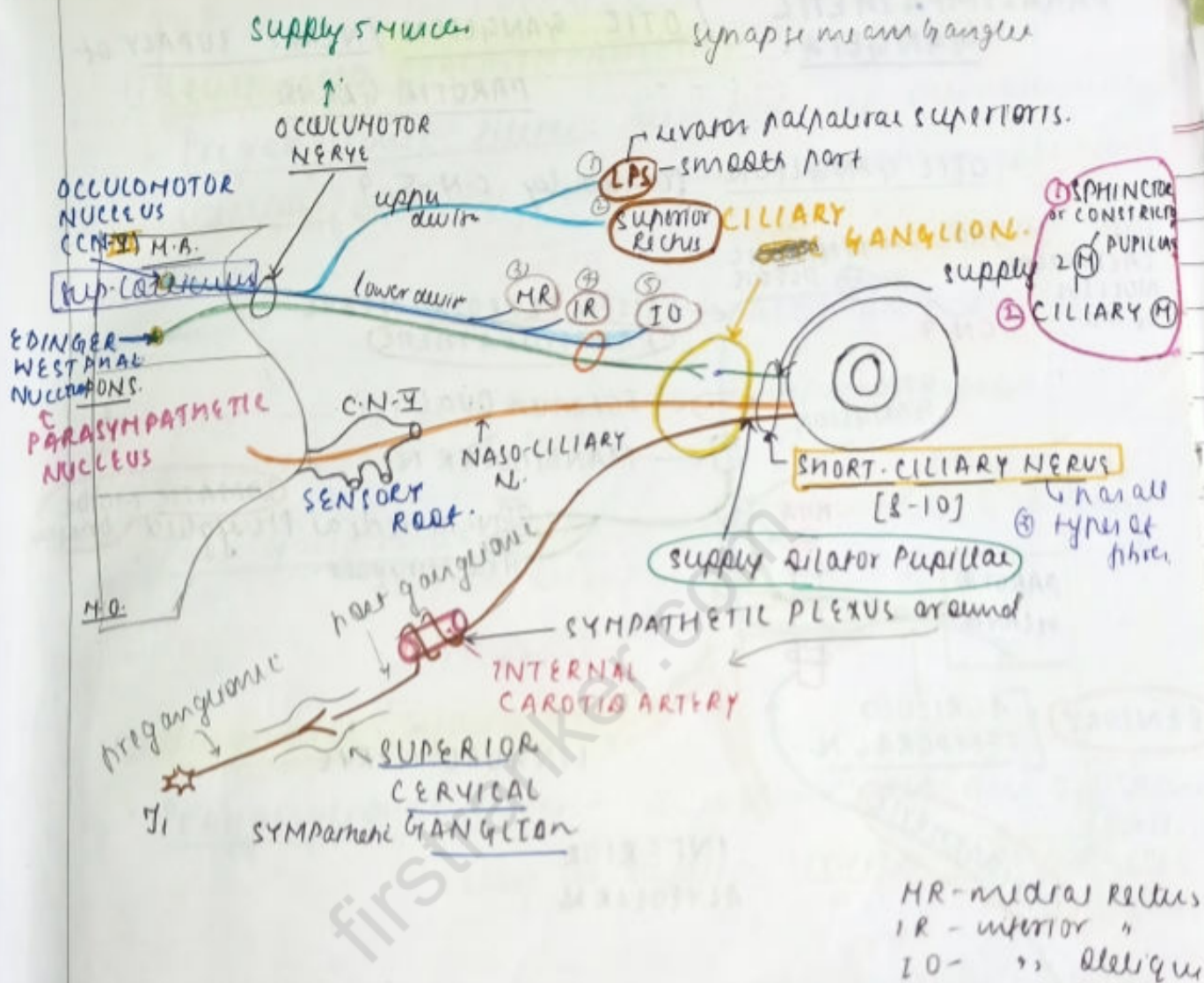
CILIARY GANGLION & CN-III

related to eye.

- It is peripheral parasympathetic ganglion
- +ve in course of OCULOMOTOR NERVE (CN-III)
- +ve near apex of eye orbit between OPTIC IV. & Tendon of Lateral Rectus (M).

- It has 3 roots -
 - i) Parasympathetic root - ^{arises from} EDINGER WESTPHAL nucleus
 - ii) sensory root : arises from TRIGEMIN - ALN. (Ophthalmic br.)
Naso-Ciliary Branch.
 - iii) sympathetic root : formed by lateral horn of 7th spinal segment.

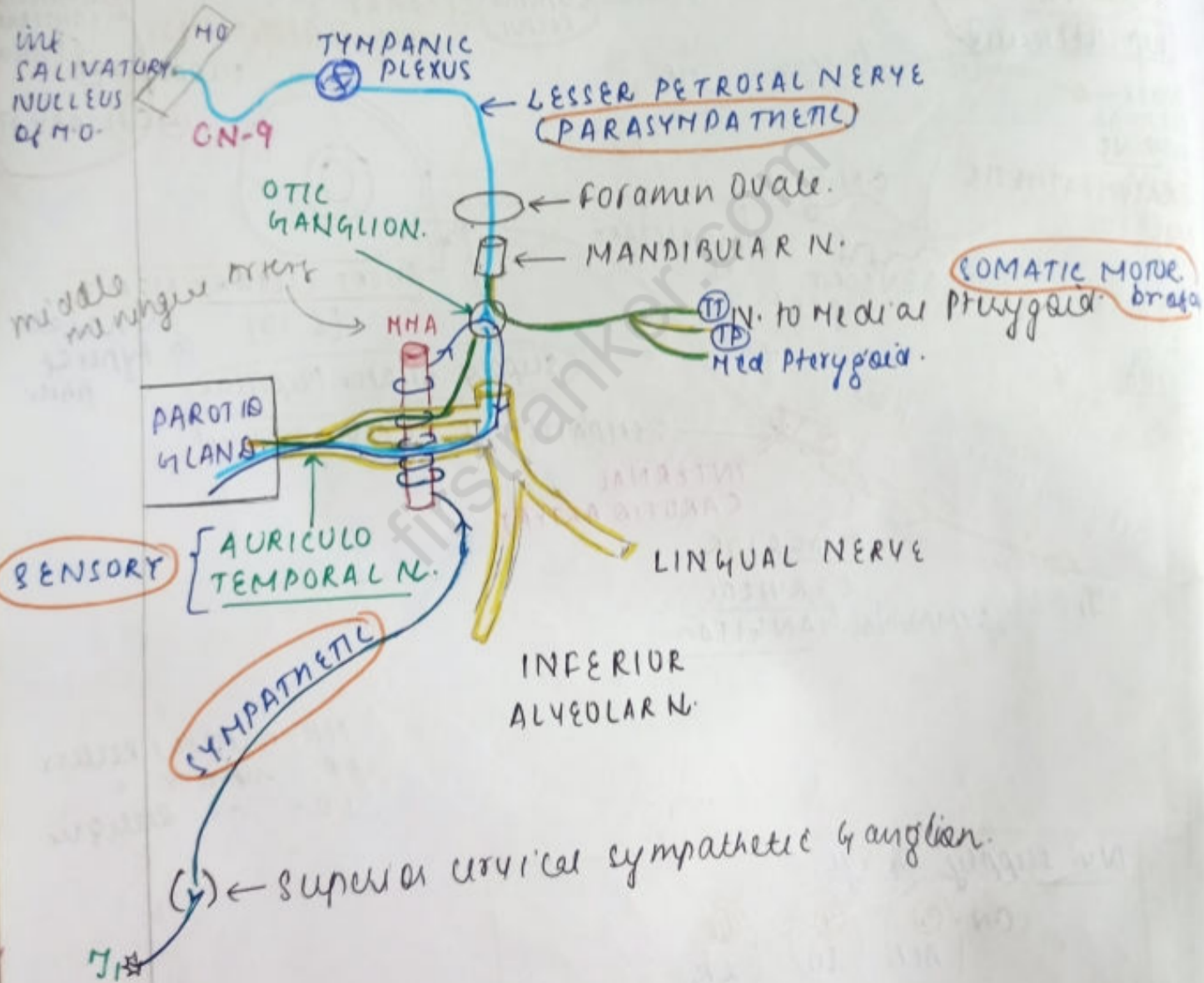




PARASYMPATHETIC GANGLIA.

OTIC GANGLION. / NERVE SUPPLY OF PAROTID GLAND.

- OTIC GANGLION - formed by C.N-5, 9
(2nd branch (mandibular))



① Secretomotor (Parasympathetic)

- Preganglionic fibres: arise from int. salivary nuclei. inferior salivatory Nucleus → Glossopharyngeal Nerve. CN-9.

↓
Tympanic branch of
CN-9.
(JACOBSON'S NERVE)

↓
Tympanic plexus.
← Lesser petrosal Nerve
Relay in Otic ganglion

- Post ganglionic fibres: - arise from Otic ganglion. March through Auriculotemporal Nerve to supply the parotid gland.

② Vasomotor (Sympathetic)

- Preganglionic fibres: - arise from T1 segment of spinal cord.
↳ relay in superior cervical sympathetic ganglion.

- Post ganglionic fibres: arise from superior C.S.G.
↳ runs along arteries (eg. E.C.A) to supply parotid gland

③ SENSORY: -

- Auriculotemporal N.
- Great Auricular N.

* sympathetic & sensory fibres pass through Otic ganglion but do not relay in it.

24/03/19
Wed.

comes from M.O.
GLOSSOPHARYNGEAL NERVE (CN-9)
N. of 3rd Arch
pharynx
Lesser petrosal N.
Otic ganglion
Cervical ganglion

① **TYMPANIC Br.** / **JACOBSON'S N.** → form **TYMPANIC plexus** - giving br. N. → **Mucosa of**
Oropharynx

② **CAROTID Br.** / **N. of HERING** → TO **carotid sinus & carotid body**
Baroreceptor & chemoreceptor

③ **PHARYNGEAL Br.** → form **pharyngeal plexus**
pharynx + soft palate
above middle constrictor
CN-10
① Vagus carrying parasympathetic
CN-11
Accessory to
⑫ CN-9
⑭ sup. cervical sympathetic ganglion

④ **TONSILAR Br.** → palatine tonsil
soft palate
faucus - place where palatine tonsil are

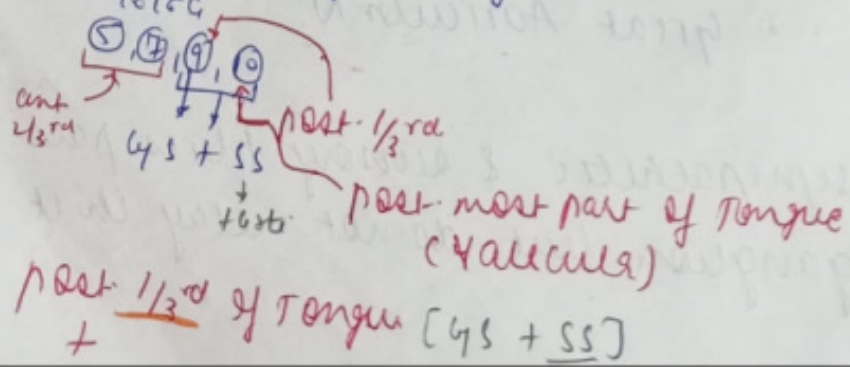
④ **TONSILAR Br.**

⑤ **MUSCULAR Br.** - Motor br.
only ①
TO **stylopharyngeus**

all ⑥ of pharynx & pharyngeal plexus except ①

⑥ **LINGUAL Br.** - sensory br

→ **Tongue - sensory supply**



Middle ear cavity
pharyngeal tube - Ant. part
Mastoid process

M.O. → GANGLIA

③ **CAROTID Br.**

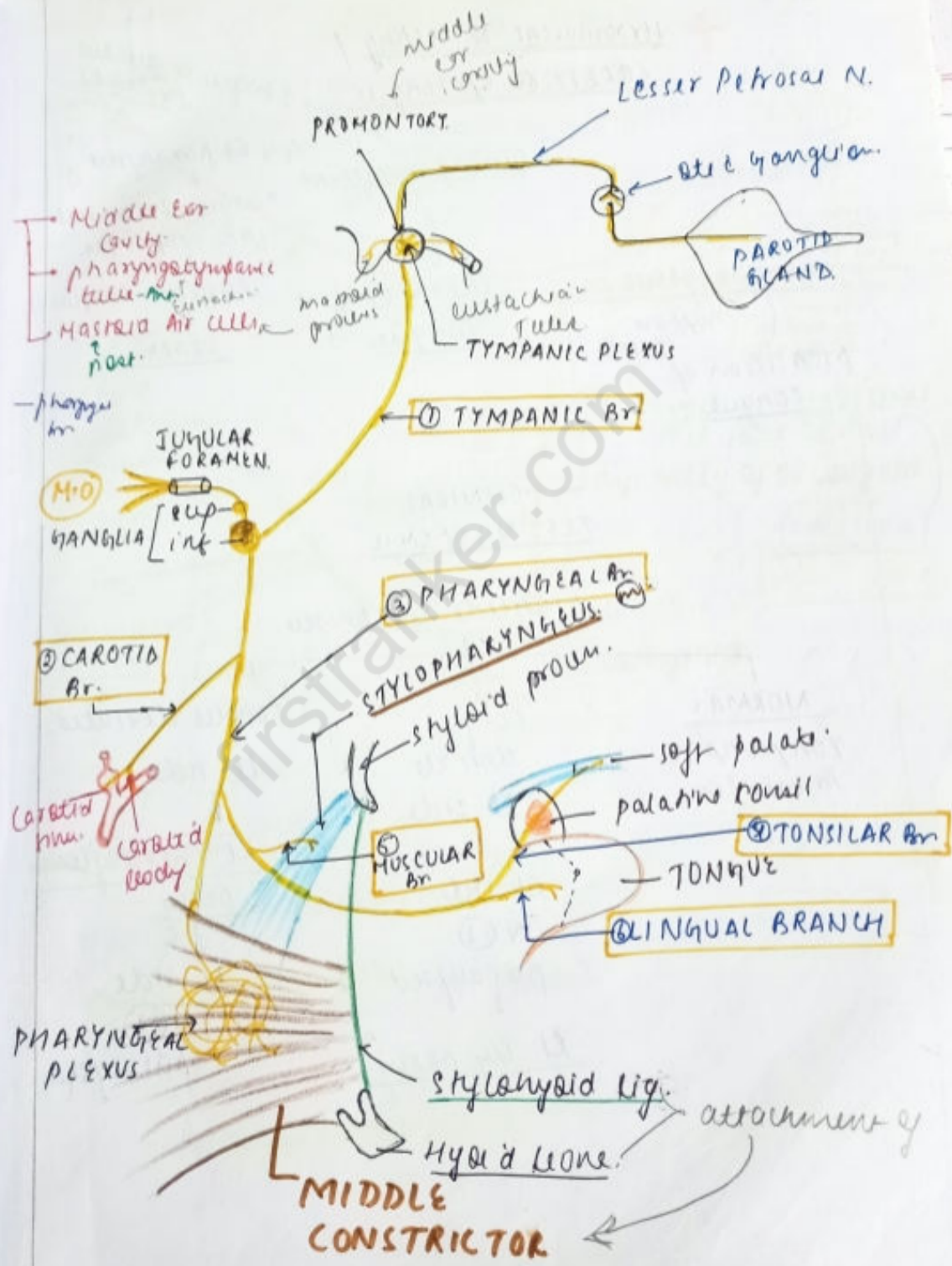
Carotid sinus

PHARYNGEAL PLEXUS

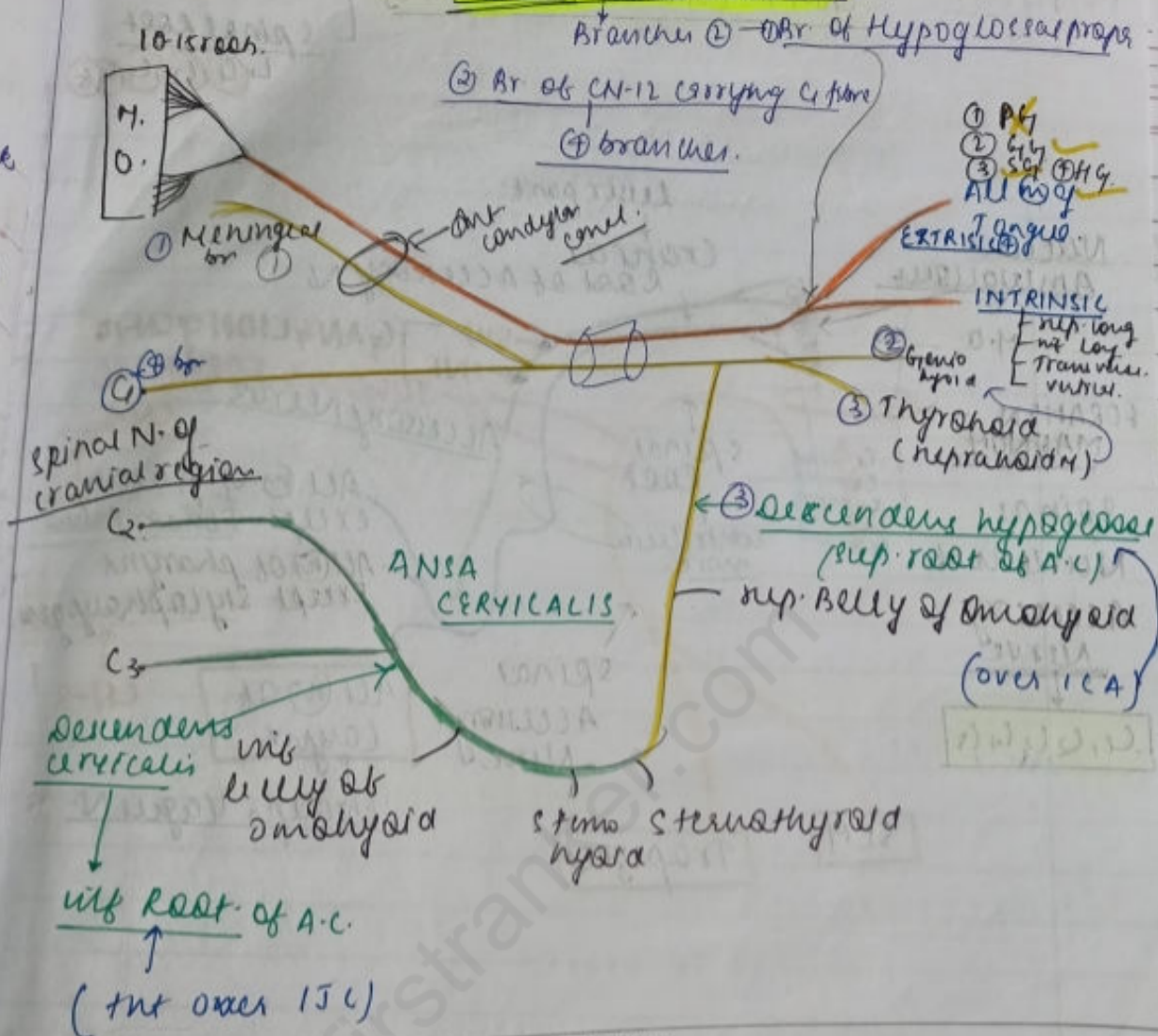
stimulator
to
Otic
ganglion
Parotid
gland
petrosal N.

Muscle of -

CN 10
① Vagus
Carrying
parasympathetic
CN 9
② CN-9
③ vag.
Cervical
sympathetic
ganglion



CN-12 (HYPOGLOSSAL N.)



COURSE

Hypoglossal Nucleus
 ↓
 Anterolateral column
 of M.O. (l/w pyramidal & olive)
 ↓
 fuse to form 2 roots
 ↓
 enter hypoglossal canal
 ↓
 fuse to form ① Nerve
 ↓
 behind CN-9 & 10
 ↓
 pass b/w ICA & CCA
 ↓
 superficial to ICA & CCA
 ↓
 superficial to loop of Lingual Artery

supply tongue
 ↓
 reach above hyoid bone

**+ HYPOGLOSSAL N. Testing /
SAFETY of Tongue**

Tongue is pulled forward

During anaesthesia

4/4 @ paralysed
↓
Tongue falls back into oropharynx
↓
disturb air flow
↓
Death

• GENIOGLOSSUS M.

↑
supplies by CN 12
protrusion of Tongue.

safety of Tongue →

CLINICAL TESTING of CN-12

protrude the tongue.

NORMAL

Tongue tip in midline

Tongue deviates
Rt. side

↓
Rt side
CN 12
paralysed

↓
Rt. 4/4 palsy

Tongue deviated

Lt. side

↓
Lt. Genioglossus palsy

↓
Lt. side
CN 12
paralysed.

CN-11 [ACCESSORY NERVE]

cranial root
spinal root
C1, C2, C3, C4

lesser part

cranial root of Accessory N.

Nucleus Ambiguus

M.O.

FORAMEN MAGNUM

spinal Nucleus of Accessory Nerve

C1, C2, C3, C4, C5

spinal root
contributes more.

spinal Accessory Nerve

SCM

Trapezius

GANGLION CN-10
JUGULAR FORAMEN
Accessory Nerve
CN-5

All m of palat except tensor palat
All m of pharynx except stylopharynx

All m of Larynx

through Vagus N.

CN-3

CN-5

Vagus Nerve (CN-10)

Supply all organs from clavicle to pelvis

Branches:-

① Meningeal br. - supply dura mater of posterior cranial fossa.

② Auricular br. [Arnold's N / Alderman's N] - post-nip
post of TM - except

③ Pharyngeal br. - form pharyngeal plexus - m/s of soft palate & pharynx except

④ Carotid br. → supply carotid sinus & carotid body.

⑤ Superior Laryngeal N. - EXTERNAL LARYNGEAL N. - MOTOR
IV. of 6th P. Arch. - accompany Arty - sup. thyroid

[press thyrohyoid membrane with sup. laryngeal N.]
⑥ Internal Laryngeal N. - SENSORY
→ CRICOTHYROID Y.
→ inf. constr. of larynx
→ forms pharyngeal plexus.

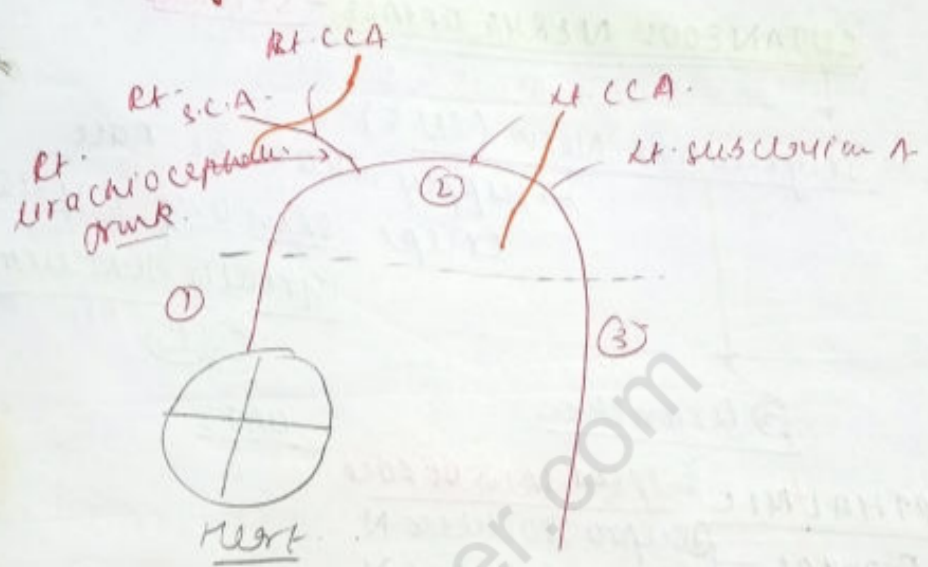
⑦ Recurrent Laryngeal N. - ENTER LARYNX
supply mucous membrane of larynx upto vocal cords
supply all m/s of larynx except

⑧ Cardiac Branch
RT - Neck - wind backward below subclavian A.
LT - Thorax - wind backward below arch of aorta.
IV. of 6th PHARYNGEAL ARCH.

sup. cardiac br. → deep
inf. cardiac br. → Rt. - superficial
Lt.

Heart gets blood supply through sup. & superficial cardiac plexus

Vagus Nerve



• Recurrent Laryngeal N. - Br. to Trachea, esophagus.
[cardiac supply]
form deep cardiac plexus

CUTANEOUS NERVE OF FACE - SENSORY

Trigeminal Nerve (CN-5)

↳ supply whole of face except skin over L of Mandible

Greater Auricular Nerve

(C2, C3)

OATS

3 branches.

① OPHTHALMIC - $\frac{1}{3}^{\text{rd}}$ skin of face

Frontal - Intra Orbital N.
② " Orbital N.

③ Lacrimal

Nasolacrimal

④ External Nasal.

Intra Trochlear N.
Ant. Ethmoidal N.
Post. Ethmoidal N.
Long Ciliary N.
N. to Ciliary ganglion.

② MAXILLARY DIVISION - $\frac{1}{3}^{\text{rd}}$ skin of face.

① Intra Orbital N.
② Zygomaticotemporal N.
③ Zygomaticofacial Nerve.

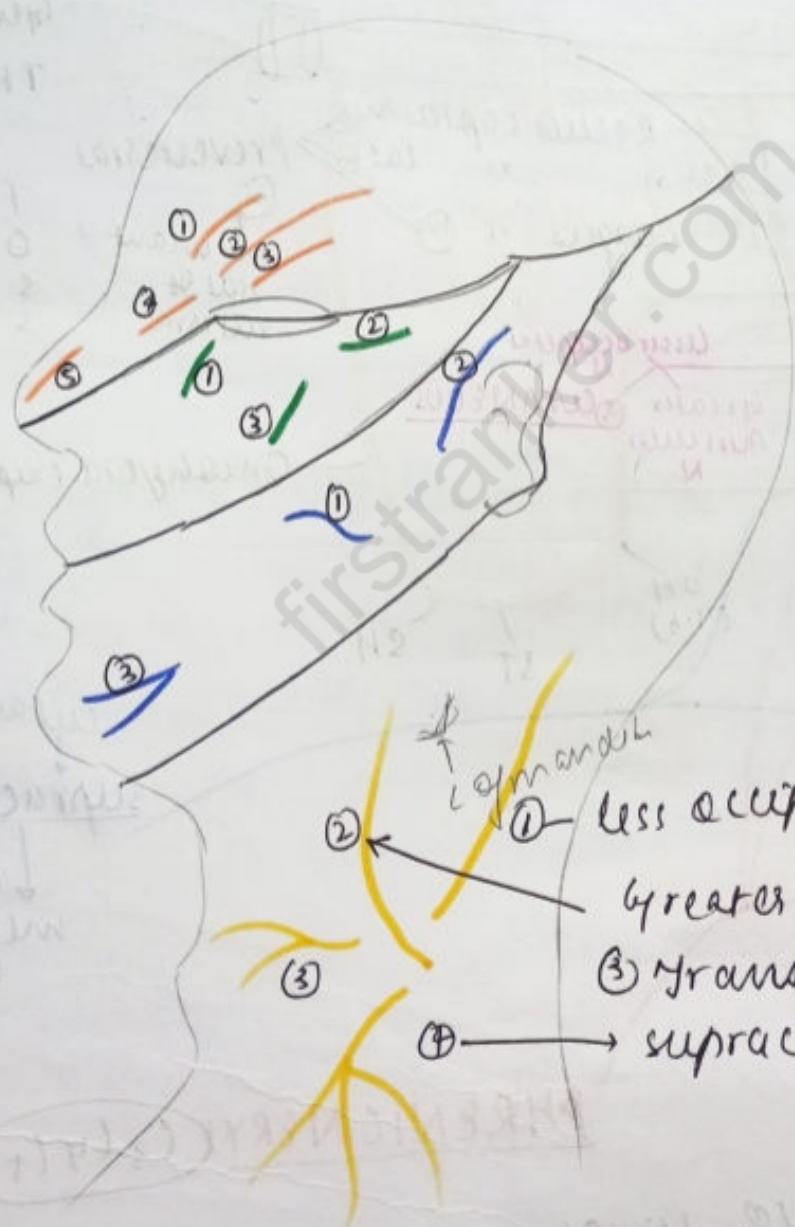
③ Mandibular Division $\frac{2}{3}^{\text{rd}}$ Face

① Buccal N.
② Auriculotemporal N.
③ Mental N.

CUTANEOUS N. of Neck.

- cervical plexus - ⑦ cutaneous br.
- ① Ant. div. of great Auricular Nerve - C₂, C₃
 - ② upper division of Transverse [Ant. Cutaneous N. of Neck] - C₂, C₃

lesser occipital supraclavicular

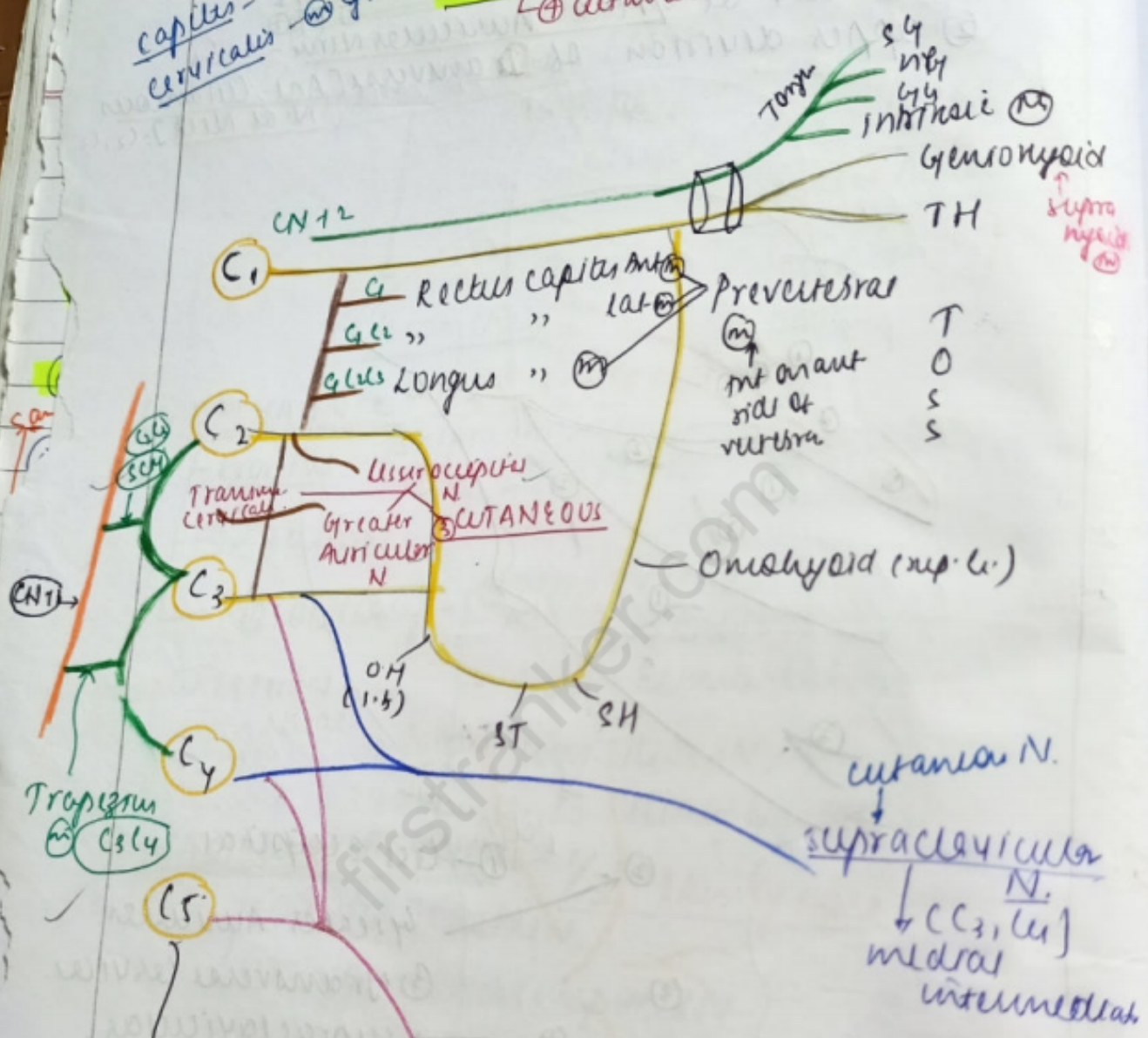


- ① lesser occipital
- ② Greater Auricular.
- ③ Transverse Cervical.
- ④ supraclavicular.

capitis - mean attached to neck
cervicalis - @ Greek

CERVICAL PLEXUS

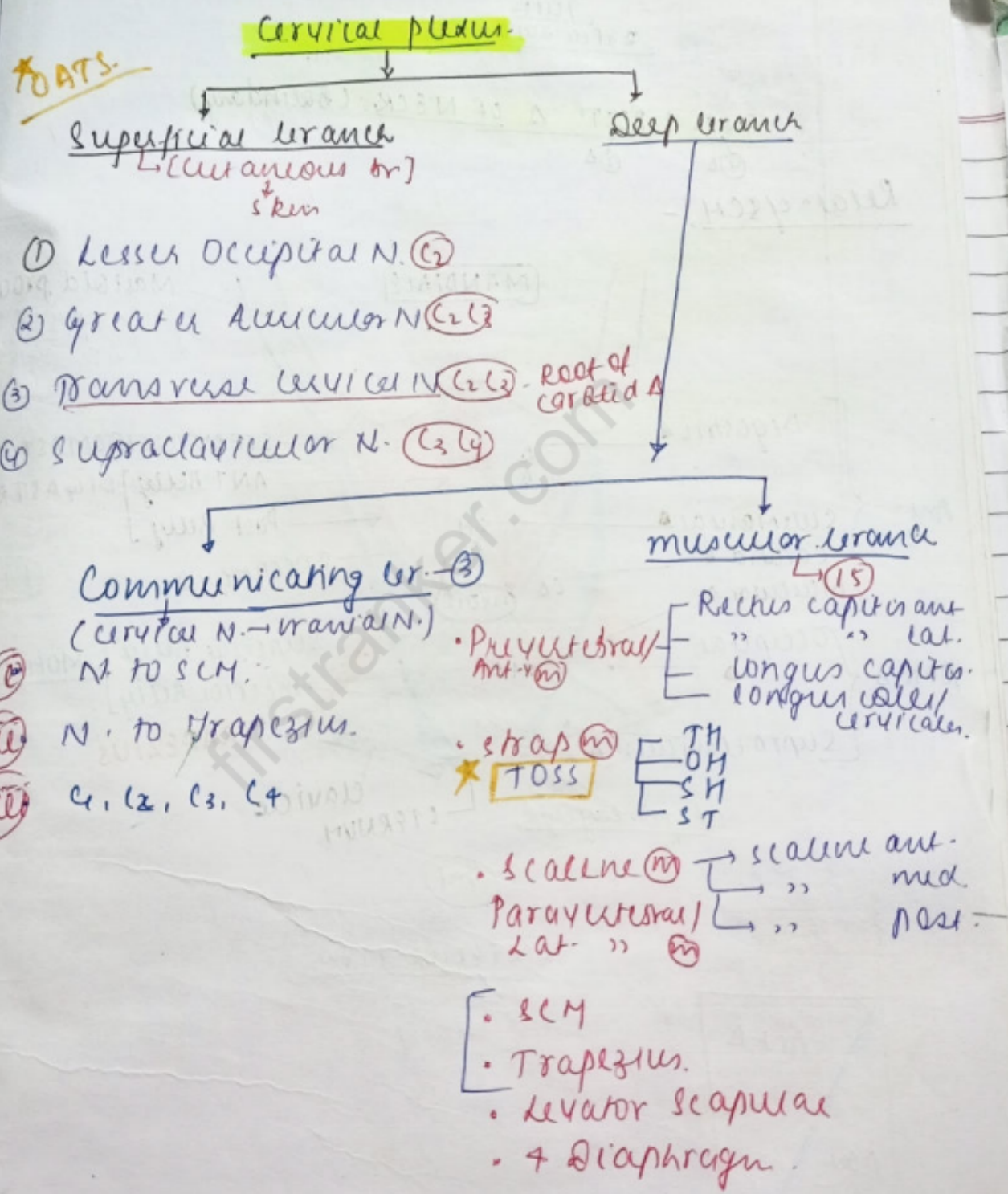
④ cutaneous N.



PHRENIC NERVE

(C3, C4, C5)

Rhomboid (minor & major) (C5)
DORSAL SCAPULAR Nerve
Levator scapulae (C3, C4, C5)
Long Thoracic Nerve (C5, C6, C7)

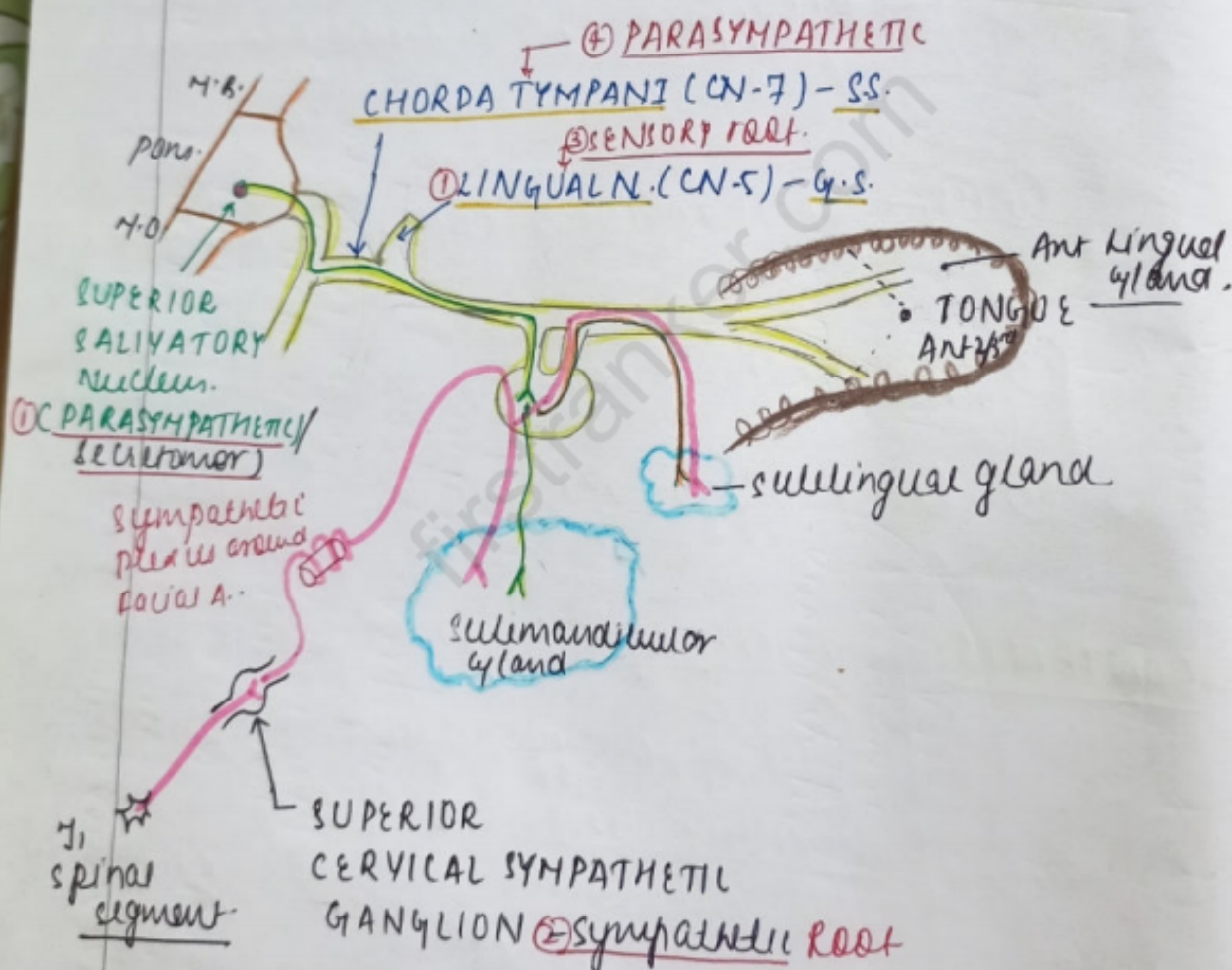


Date: 14/04/2019

SUBMANDIBULAR GLAND.

LANGLEY'S GLAND.
• CN-5, 7
• Tongue N. supply.
• Union on Hyoglossus (CN)

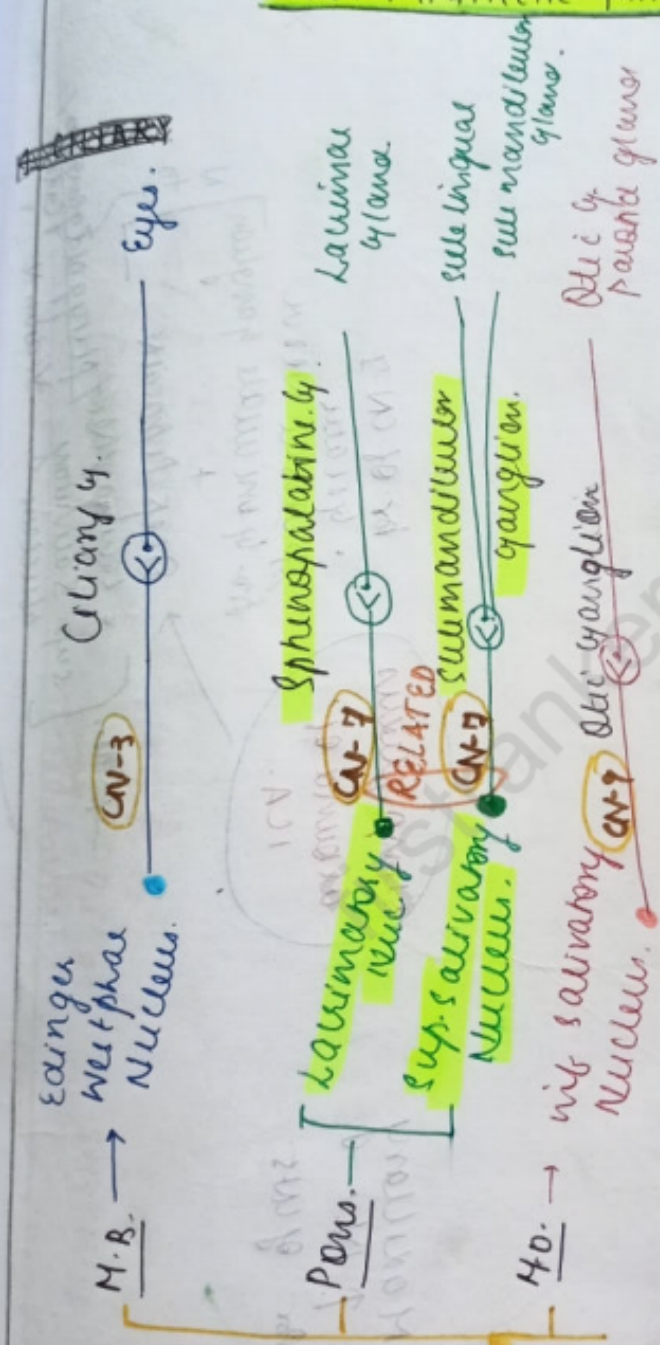
Lingual N.
↑
Topographically
Functionally
↓
C.N-7.
(Chorda Tympani)



Sympathetic Root - always related to blood vessel.

PARASYMPATHETIC GANGLION.

preganglionic fibres longer than postganglionic



PARASYMPATHETIC Nervous System
[Cranio-sacral outflow]

Nervi Erogeni
S₂ S₃ S₄

GANGLION

1. CILIARY

PARASYMPATHETIC GANGLION **Functionally all**
RECEPTORY (CN-5) **SYMPATHETIC** (ARTERY) **PARASYMPATHETIC / SECRETORY**
 Topographically related
 Nasociliary N. (Opthalmic br. of CN-5)
 Sympathetic plexus around Opthalmic A.
 br. of ICA. sup. + Edinger Westphal nucleus of midbrain

H.D. 50.5

MOTOR

X

2. SPHENOPALATINE PTERYGOPALATINE GANGLION

Ny. supply of Lacrimal gland

Maxillary
 ↑ IV.
 br. of CN-5

Symp. plexus around of ICA.

br. of CN-7
 • Glosopharyngeal Nerve
 from Glosopharyngeal ganglion
 +
 Deep Petrosal N.

pons
 * Lacrimal Nerve
 sup. Salivatory nucleus
 Pterygopalatine ganglion
 Vidian N. Carotid

X

3. SUBMANDIBULAR Lingual N. (CN-5)

Symp. plexus around
 • FOUCAULT
 (br. of ECA)

br. of CN-7
 • Chorda tympani N.

X

sup. Salivatory nucleus

4. OTIC - Auriculotemporal N. mandibular (br. of Trigeminal N.)

Symp. plexus around MHA.
 (br. of ECA)

br. of CN-9
 • Lesser petrosal N.
 from Tympanic plexus.

N. to Medial Pterygoid.
 → TT.
 → T.P. Med. Pterygoid

M.O. [inf. salivatory nucleus]