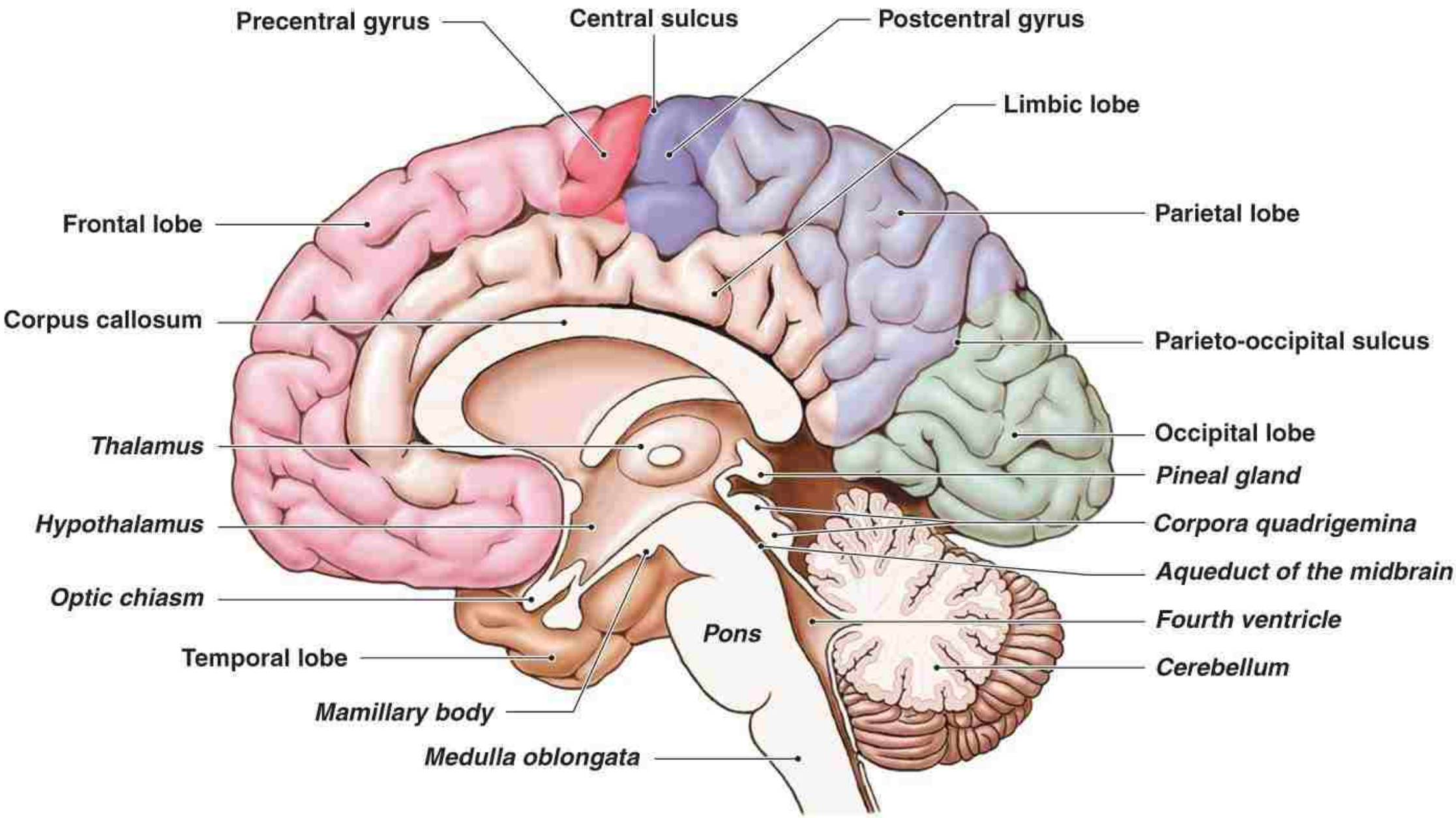
A midsagittal view showing the inner boundaries of the lobes of the cerebral cortex (Structures outside of the cerebrum are labeled in italics.)



receive fibres called to commissural fibres.

⊛ Cerebrum

Intro —

External Feature - i) 3 Surface ii) 4 Border iii) 4 Pole
↓
* (Explain)
↓
* Lobe wise Function

- Insula
- Interiour of cerebral Hemisphere
  * 4 Types of cells
- White Matter of cerebrum
  * 3 Types of fibres.
- Blood Supply
- Venis Drainge
- Clinical Anatomy (4414F)
  - Broncas area etc.
  - Lobe wise Function

→ Biggest & most sup. Part of Human Brain
→ 85% of Total Brain Volumn
→ 900 - 1100 gm weight

* Vertebrates of Brain

(1) Cerebrum —
(प्रमस्तिष्क)

→ The cerebrum is an Important Part as it is associated with the
- Intelligence
- memory
- Planing of future
- ability of Reading, writing, calculations Speakes etc —

→ The cerebrum consisst of two cerebral Hemispheres containings cavity of lateral venticis.

→ Two Hemispheres are Joined togethes in the Mid Plane By corpus callosum

→ gyri → folds of surface of cerebrum
sulci → groove Blw the gyri

Teacher's Signature.....

⊛ External features

Surface

i) Supero-lateral surface - convex
ii) Medial surface - Two Hemispheres are separated from each other By Falx cerebri.
↓
Longitudinal fissure

iii) Inferior surface - Divided into (2)

1) Orbital surface → Produced By Frontal lobe
2) Tentorial surface → Produced By Temporal and occipital lobes.

Border

i) Supero-medial Border
ii) Infero-lateral Border
iii) Medial orbital
iv) Medial occipital

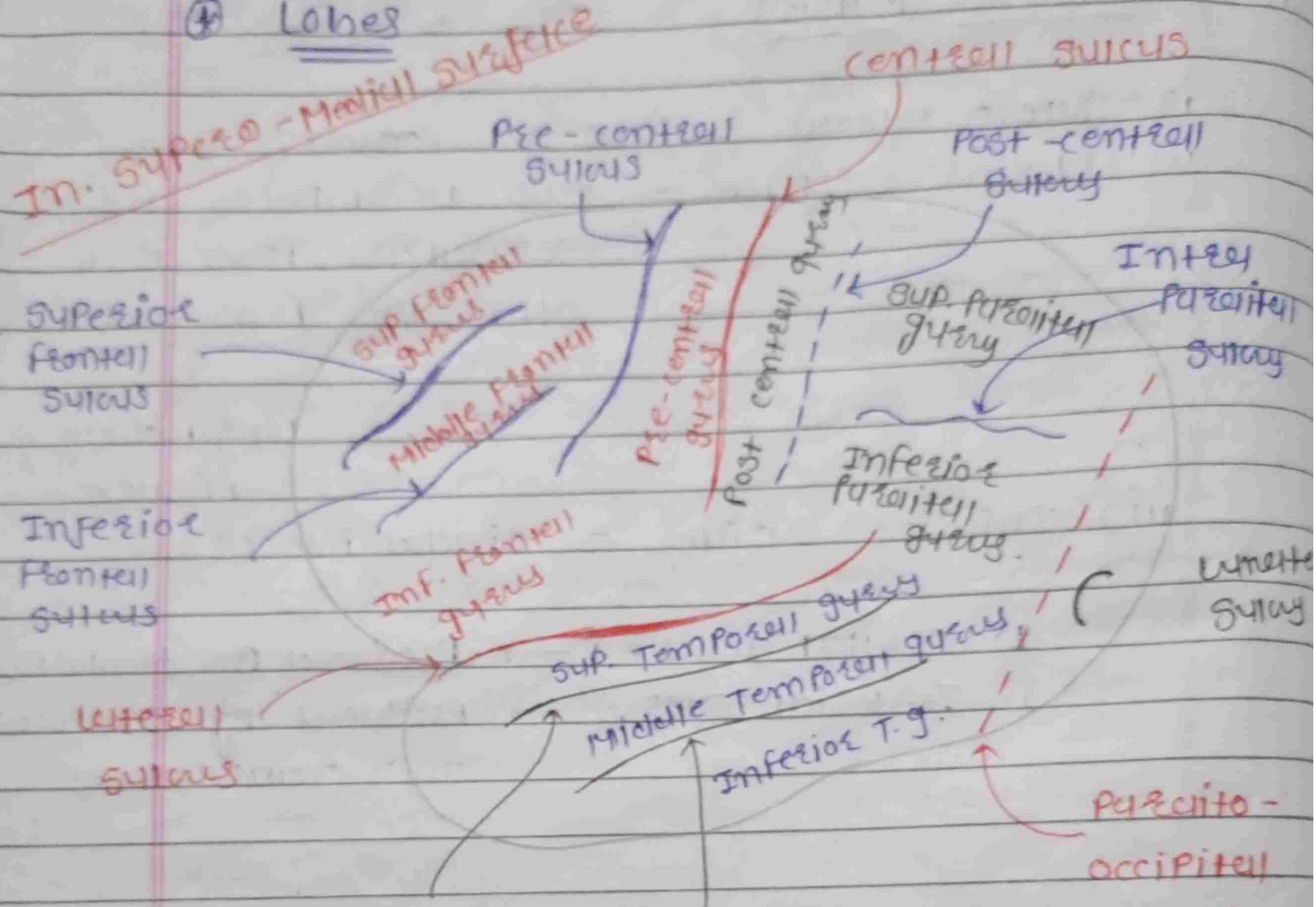
Poles

i) Frontal Pole
ii) Occipital Pole
iii) Temporal Pole
iv) Parietal Pole

Teacher's Signature............

- Lobe wise

① Lobes



Lobe	Sulcus	gyrus
Frontal lobe	- central Sulcus - Pre central Sulcus - Sup. frontal Sulcus - Inf. frontal Sulcus	- Pre central gyrus - Sup. frontal gyrus - Inf. frontal gyrus - Middle frontal gyrus
Parietal lobe	- Post. central Sulcus - Intra Parietal Sulcus	- Post. central gyrus - Sup. Parietal gyrus - Inf. Parietal g.

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Tempo-rall Lobe	- Lateral Sulcus - Sup. Temporal g. - Inf. Temporal s.	- Sup. Temporal g. - Inf. Temporal g. - Thiddle Temporal g.
Occipital lobe	- Lunate Sulcus	- Sup. occipital g. - Infe. occipital g.

In Medical Surface

- ~~Ant~~. Callosal Sulcus. - Calcarine Sulcus	- Cingulate gyrus. - Cuneus.

In Inferior Surface

Orbital Part	- Olfactory Sulcus - Orbital Sulcus	- Ant, Post, Medial, lateral orbital gyrus
Middle cranial fossa & Tentorial	- Collateral Sulcus	- Lingual gyrus

Teacher's Signature.....

(*) Functional areas of cerebral Cortex

Lobe	Area.	Area No.	Location (X)	Represented on Body Part (X)	Function
Frontal	Motor	4	Precentral g. and Paracentral lobule	Upside down inside except face	- controles voluntary activity of the opposite half of Body
	Premotor	6	Post. Parts of Sup. Middle & Inf. frontal g.	—	- controles extrapyramidal system.
	Frontal eye Field	6 8			- control the Horizontal movement of eyes.
	Motor Speech (Broca's area)	44 & 45			- Spoken & Speech
	Prefrontal	9 10 11 12			- controls the emotions and concentration

Teacher's Signature.....

Parietal	• Sensory (Somesthetic)	3, 1, 2	- Touch, Pain and Temperature
	• Sensory	5, 7	- Role in Speech Production
	(Association) [Wernicke's Speech a.]	40	
Occipital	visuo-sensory area or striate	17	- Involved in eye movement and vision
Temporal	auditory area	22, 21 41, 42	- Involved in Hearing

Frontal - 4, 6, 8, 9, 10, 11
- Broca - 44, 45

Parietal - 2, 1, 3 - 5, 7

Wernickes area - 40

Occipital = 17, 18, 19

Temporal = 22, 21 41, 42

Teacher's Signature.....

→ In the frontal & Temporal lobe

✱ Insula (Distal lobe of cerebral cortex)

- Refers to a Hidden Brain Region
- Insula cortex crucial for emotions, self awareness and Bodily states like Hunger & Pain

✱ Interior of cerebral Hemisphere-

cerebral cortex → Outer layer :- grey Matter
→ central core :- white Matter (Inner Part)

→ which contains masses of grey Matter eg. thalamus
Hypothalamus
Basal Nuclei-

- Neurons of cerebrum cortex-

1) Pyramidal cells - largest in numbers
- Triangular Shape

2) Horizontal cells - axons lie Horizontally
3) - Spindle like Shape

3) Basket cells - axons lie Horizontally
- In tips Network of fibres

4) Stellate cells - Small and multi Polar with Short axons

Teacher's Signature

Fibres → Association Fibres (Arcuate)
→ Commissural Fibres
→ Projection Fibres.

1) Short Association Fibres - B/w Two gyri (adjacent)

2) long Association Fibres - connect, More widely separated gyri

i) uncinate Fasciculus :- connected to Temporal lobe to motor speech area & orbital cortex

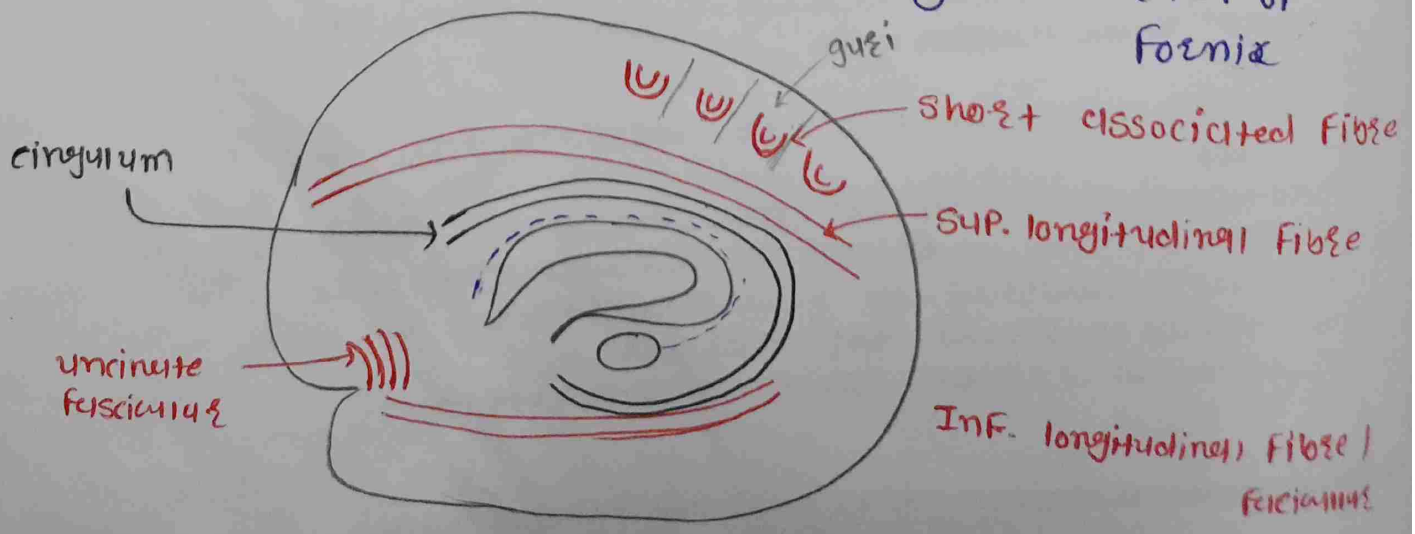
ii) cingulum :- connected to cingulum gyri to Paral Hippo-campal gyrus.

iii) Sup. longitudinal Fasciculus :- connected to frontal lobe to occipital & Temporal lobe

iv) Inf. longitudinal Fasciculs :- connected to occipital lobe to Temporal lobe

3) Commissure Fibres :- connects - corresponding part of 2 x Hemispheres.

- corpus callosum - connecting cerebral cortex (2 side)
- Ant. commissure - Archipallia of 2 side
- Post. commissure - Sup. colliculi
- commisure of fornix - connecting to crura of fornix



1. The Supply (Arterial)

- **Anterior (Carotid System):** The **Internal Carotid** supplies most of the cerebrum. Its branches, the **ACA** (midline) and **MCA** (lateral), are the "workhorses" of motor and sensory function.
- **Posterior (Vertebrobasilar System):** Two **Vertebral arteries** merge into the **Basilar**, feeding the brainstem, cerebellum, and the **PCA** (vision).
- **The Safety Net:** The **Circle of Willis** connects these systems at the base, allowing blood to reroute if one side is blocked.

2. The Drainage (Venous)

- **Structure:** Thin, valveless veins drain into **Dural Venous Sinuses** (channels between brain-lining layers).
- **Deep vs. Superficial:** Deep structures drain via the **Vein of Galen**; the cortex drains via superficial veins into the **Superior Sagittal Sinus**.
- **The Exit:** All blood eventually funnels into the **Internal Jugular Veins**.

3. Clinical Anatomy

- **Stroke:** Most common in the **MCA** territory (causing face/arm weakness).
- **Aneurysms:** Usually "berry" type at the Circle of Willis junctions; rupture causes a subarachnoid hemorrhage.
- **Hematomas: Epidural** (arterial tear, fast) vs. **Subdural** (bridging vein tear, slow).
- **Cavernous Sinus:** Infections here can track from the "danger triangle" of the face to the brain.