

Vision – System and Circuits

- 1)
 - i) Recapitulate in a drawing the principle of binocular field in human vision?
 - ii) Add to your drawing the pathways (i.e., main targets) carrying the information from the eye to the primary visual cortex V1
 - iii) What part of the visual field of view would be impaired in the case of a total section of the right optic tract downstream of the optic chiasm?

- 2) Name the two main pathways in the Lateral Geniculate Nucleus (LGN).
 - ii) What is the principal difference between optic tract and LGN axons?
 - iii) If a person has symptoms of not being able to detect rapidly changing location of object(s) but color vision is intact, where do you think the impairment is located in LGN layers?

- 3) i) Explain the principle of retinotopic map in the visual system.
ii) Is the distribution of photoreceptor cells along the retina uniform? If not, where is the location of area with highest photoreceptor distribution?
iii) If a visual stimulus is perceived by the right eye (providing the fact that left eye is closed) which primary visual cortex (which hemisphere(s)) will process that information?
iv) Explain what is the phenomenon of cortical magnification using the organization of the primary visual cortex and of the primary somatosensory cortex as examples
- 4) There are different tools used to study the visual cortex. One of them consists in recording the brain activity using an electrode equipped with multiple electrode sites.
i) Cite two orientations in which electrodes can be inserted?
ii) Which insights do we get on visual processing using these two approaches?