

Opto-328

Study Guide for the First Midterm

- First midterm is on Sunday Oct 6th, 2013.
- The purpose of this study guide is to organize your thought as you study for the exam.
- Everything in lectures slide is included in the exam. If some topics doesn't included in the study guide, this doesn't mean you can skip it.

Exam Format:

- About 30-40 questions
- Multiple choice
- True/ False
- Fill in the blanks
- 1 or 2 figures (Retinal layer or Photoreceptor structure)

After you study, make sure that you know the followings:

1. Retinal layers and organization.
2. Function of each layer and cells.
3. Which cells synapse with which and where the synapses is occur.
4. The relationship between photoreceptors and the cells in the other layers , the convergence (Ex: 1:1 in the center).
5. The different between 2 types of ganglion cells.
6. What happen to ganglion cells with eccentricity?
7. Parts of photoreceptor and function of each part?
8. The different in structure between rods and cones.

9. Types of pigments in retina (for rods and cones)
10. Numbers of rods and cones, and where is the maximum concentration for each one.
11. The range of wavelengths that the photoreceptor are sensitive to.
12. Photopigment components.
13. How the components differ in each photopigment.
14. Terms in the first slide of lecture 3 are very important.
15. Classes of synapses.
16. Which cells are capable of generating Action potential and which cells are capable of generating graded potential?
17. Cones circuit of the retina, sign conserving and sign inverting pathway.
18. Rod circuit of the retina, and the role of Amacrine cell II.
19. The type of synapses between Amacrine II and cone ON and OFF bipolar.
20. Excitatory and inhibitory Neurotransmitter.
21. What is photoisomerization?
22. Steps of Phototransduction cascade.
23. What we need for the gated channel in the outer segment to open?
24. Steps of Restoration of normality in photoreceptor after cessation of light.
25. How many photons are needed for the rod to response, and how many are required for the visual system to respond?
26. Production and Turnover of Outer Segment Disc Lamellae.
27. Assignments questions.

Wish you all the best

Shatha