

UNIVERSITY OF OSLO

Faculty of Mathematics and Natural Sciences

Exam in MBV3050
Day of exam: December 4th 2008
Exam hours: 3 hours
This examination paper consists of 1 page(s).
Appendices: 3
Permitted materials: None

Make sure that your copy of this examination paper is complete before answering.

Question 1:

Long lasting neuropathic pain often occurs after injury to peripheral nerves.

- a) What is neuropathic pain?
- b) Explain how injury of peripheral nerves (cut of axons) may lead to peripheral sprouting and dorsal horn reorganization.
- c) Why is peripheral sprouting and dorsal horn reorganization important for development of neuropathic pain?

Question 2:

- a) Describe the reflex mechanisms that regulate plasma osmolality.
- b) How do the two limbs of the loop of Henle of the nephron differ in their water permeability, and the relevance of this to the kidney capacity to produce an urine osmolality lower than plasma osmolality?

Question 3-5:

Question 3-5 should be answered by marking the enclosed sheets (appendices).

Question 3: Place an "X" when the term or number in each line is connected to the term in each column. There can be 0-6 "X" in each line. +1 point is given for each correctly placed "X" and -1 for a misplaced "X"

	1) Autorhythmic cells	2) Vasoconstriction	3) CO ₂ transport	4) Resting venous pO ₂	5) Contractile myocardial cel	6) pO ₂ in humid air
a) phospholamban						
b) Ca ²⁺ action potential						
c) desomsomes						
d) long refractory period						
e) polynucleated						
f) carbonic anhydrase						
g) beta-1 receptor						
h) funny channel/current						
i) chloride shift						
j) Ca ²⁺ induced Ca ²⁺ release						
k) muscarinic ACh receptor						
l) 760 mmHg						
m) 150 mmHg						
n) 120 mmHg						
o) 100 mmHg						
p) 40 mmHg						
q) pacemaker potential						
r) Na ²⁺ action potential						
s) tetanus						
t) alpha receptor						

Question 5: Vision

Mark only the statements that are correct. A correctly placed mark gives +1 point, a misplaced mark -1 point

- | | Correct |
|---|--------------------------|
| 1. Accommodation makes it possible to see movements. | <input type="checkbox"/> |
| 2. Saccades can be released by visual stimuli. | <input type="checkbox"/> |
| 3. Saccades are released by sound. | <input type="checkbox"/> |
| 4. Saccades are ballistic movements. | <input type="checkbox"/> |
| 5. Microsaccades are pathological signs. | <input type="checkbox"/> |
| 6. Microsaccades stabilize the picture on the retina. | <input type="checkbox"/> |
| 7. 5 % of the light hitting the eye is caught by the photoreceptor cells. | <input type="checkbox"/> |
| 8. In darkness the cones are active. | <input type="checkbox"/> |
| 9. The photoreceptor cells are depolarized in darkness. | <input type="checkbox"/> |
| 10. cAMP participate in the transduction processes in the photoreceptor cells. | <input type="checkbox"/> |
| 11. All cells in the retina have action potentials. | <input type="checkbox"/> |
| 12. Ganglion cells have concentric receptive fields. | <input type="checkbox"/> |
| 13. M-cells are sensitive to coloured light. | <input type="checkbox"/> |
| 14. P-cells are small cells reacting to colours. | <input type="checkbox"/> |
| 15. P-cells have elongated receptive fields. | <input type="checkbox"/> |
| 16. P-cells have axons that project directly to the visual cortex. | <input type="checkbox"/> |
| 17. We see the right visual field with both eyes. | <input type="checkbox"/> |
| 18. The right visual field project to the left hemisphere. | <input type="checkbox"/> |
| 19. The primary visual cortex is divided in functional columns. | <input type="checkbox"/> |
| 20. Cells in these columns react to the orientation of the visual stimuli. | <input type="checkbox"/> |
| 21. Cells in these columns react to light in a particular region of the visual field. | <input type="checkbox"/> |
| 22. The blind spot projects the central region of the primary visual cortex. | <input type="checkbox"/> |