

4102

LS4012 (Physiology)

End sem exam

26<sup>th</sup> Nov 2018 (2-5PM)

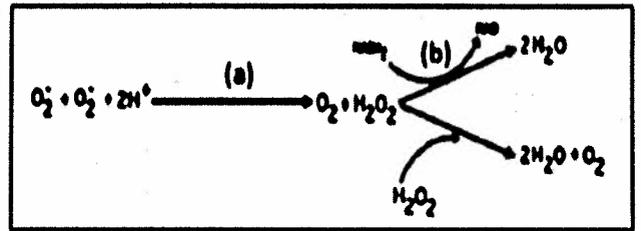
Full Marks: 50

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1. Mention 3 characteristic features of epithelial tissue. Explain with figure, the reason why a "over-confluent epithelial cell line detaches from the substratum as a thin film of tissue (membrane) rather than individual cells in response to trypsin treatment". (2+3)
2. What are aquaporins? Explain the evolutionary and functional significance of the "presence of Asparagine – Proline – Alanine (N-P-A) motif on Aquaporin on two opposite sides of the plasma membrane. Name a solvent that AQP transports in addition to water molecules. (1+3+1)
3. Using a mechanistic figure, correlate the dysfunction of a motor protein with loss of (non-development) microvillus in intestine. Name the disease and mention 1 symptom of it (3+2)
4. Using a diagram illustrate Thyroid Hormone Synthesis. Name that endocrine gland that secretes aldosterone. (4+1)
5. Using illustrations distinguish the modes of action between a steroid hormone and a peptide hormone. Name 1 hormone of the anterior pituitary (4+1)
6. Where are hair cells located? Design an experiment using electrophysiological set-up to show if a hair cell is responsive to its stimuli. (1+4)
7. **20 marks (short answer questions)**
  - a) Name a conventional and a non-conventional Myosin. State 2 differences between conventional and non-conventional myosins (2).
  - b) The onset of hypothyroidism symptoms happens after a while (a lag phase) of the actual molecular defect sets in. Explain the reason (2)
  - c) Which part of the nephron houses the 'podocytes'? State a function of the podocyte. (2)
  - d) You have 2 families with a four-generation pedigree with individuals afflicted with (a) a disease affecting only males (b) a disease that appears in the alternate generations
  - e) What would you infer about the nature of the disease w.r.t. to its Mendelian pattern of inheritance (2)
  - f) How are the phases of a beating of the heart related to the blood pressure? Explain with figs (2)
  - g) Elucidate using only 1 figure the counteracting function of NHE and V-ATPase (2)



h) Name the enzymes (a) and (b) see fig (2)



i) Why does the urine volume increases during Type I Diabetes? (2)

j) In a sentence describe the function of Rods and Cones. (2)

*Amabgubly.*