



FACULTY OF SCIENCE

DEPARTMENT OF ZOOLOGY

MODULE	PHS3B01 2016
CAMPUS	APK
EXAM	SUPPLEMENTARY EXAM, TERM 4

DATE: TBA

SESSION: TBA

ASSESSOR(S)

Prof PR Teske

INTERNAL MODERATOR

Prof. I Wagenaar

EXTERNAL MODERATOR

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DURATION: 1 HOUR

MARKS: 50

NUMBER OF PAGES: 3

INSTRUCTIONS: Answer all questions and write legibly

QUESTION 1

Briefly define the following terms (in 1-2 sentences each):

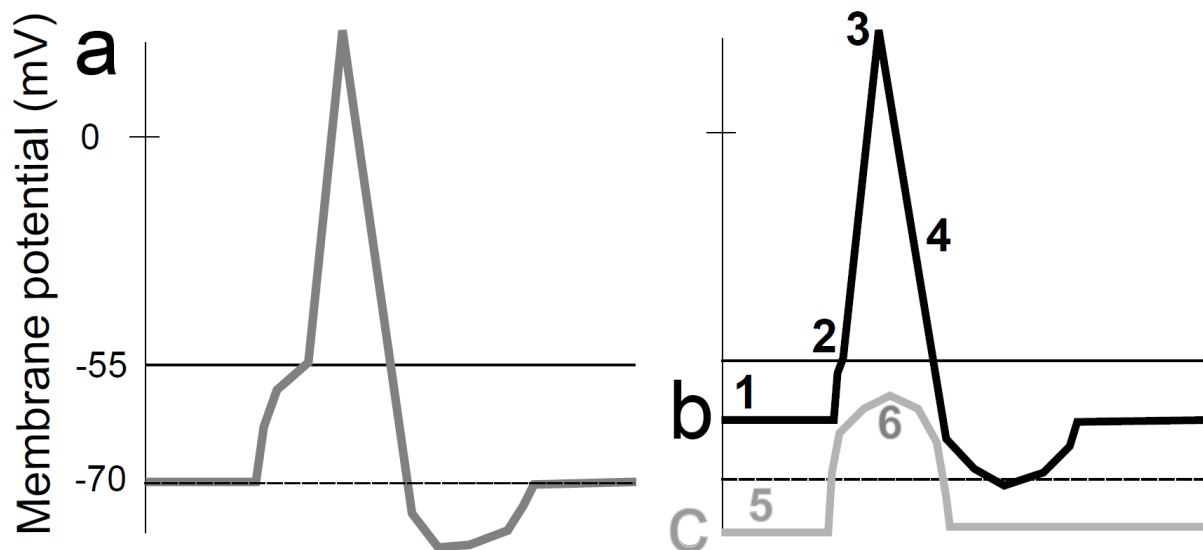
- 1.1 Buffer system [2]
- 1.2 BRCA2 [2]
- 1.3 Anti-angiogenesis drugs [2]
- 1.4 Hypo-ionic osmoconformers [2]
- 1.5 Hyperparathyroidism [2]
- 1.6 Apoptosis [2]

QUESTION 2

A toddler has suffered severe burns to the face and throat during a shack fire. A blood test [6]
reveals a reduced pH and an increased bicarbonate (HCO_3^-) level. Explain in detail what is
the most likely cause for these test values. Also describe how the toddler's acid base balance
in the extracellular fluid has changed, and how the body tries to compensate.

QUESTION 3

Figure "a" below depicts a normal action potential, while "b" and "c" depict corresponding [15]
changes in membrane potential under two different ionic disorders. State which ionic
disorders are depicted in b and c, and provide a detailed account of the molecular processes
responsible for the observed membrane potentials at points 1-6.



QUESTION 4**[4]**

In previous centuries, persons suffering from hypothermia were administered strong alcohol, which helped to get the 'feeling' back into their cold hands and feet. Why is this no longer considered to be an acceptable treatment?

QUESTION 5**[7]**

Many marine fish species inhabiting the Great Barrier Reef in Australia have a secretory kidney. Instead of losing all substances to the urine and expending energy on reabsorbing those that are desirable (~99% of the filtrate), they simply secrete only the undesirable substances into the urine, and in that way conserve energy. Discuss why extensive agricultural activities in north-eastern Australia have nonetheless rendered this type of kidney inferior to a filtration kidney.

QUESTION 6**[6]**

Explain why aldosteronism can result in the following symptoms:

1. Muscle weakness
2. Alkalosis
3. Hypertension

TOTAL: [50]