



FACULTY OF SCIENCE

DEPARTMENT OF ZOOLOGY

MODULE	PHS2B01
CAMPUS	APK
EXAM	NOVEMBER 2015

DATE: 18 NOVEMBER

SESSION: 8:30

ASSESSOR(S):

DR JC VAN DYK

INTERNAL MODERATOR:

PROF PR TESKE

DURATION: 2 HOURS

MARKS: 100

NUMBER OF PAGES: 3 PAGES

INSTRUCTIONS: Answer all the questions.

SECTION A: ENDOCRINOLOGY

QUESTION 1

Distinguish between the different classes of hormones based on their chemical structure, and give an example of a specific hormone associated with each class. (12)

QUESTION 2

Discuss the steps involved when *cyclic AMP* acts as a second messenger as part of hormone action on a target cell. (8)

QUESTION 3

Explain how the hypothalamus integrates the activities of both the nervous system and the endocrine system with reference to the adrenal gland. (6)

QUESTION 4

Explain how the body maintains normal blood pressure and blood volume through the renin-angiotensin-aldosterone system. (14)

Subtotal: /40

SECTION B: NEUROPHYSIOLOGY

QUESTION 1

1.1. Name the neuroglial cells responsible for the myelination of axons in the Central Nervous System (CNS) and the Peripheral Nervous System (PNS), respectively.

(2)

1.2. Compare continuous and saltatory propagation of action potentials in terms of conduction velocity. (4)

QUESTION 2

Explain presynaptic inhibition and facilitation and give an example of neurotransmitters involved in each of these processes. (8)

QUESTION 3

With the aid of a drawing, explain the route sensory information will follow from interoceptors in the back, limbs and visceral organs towards the gray matter in the spinal cord through a typical thoracic spinal nerve.

(8)

QUESTION 4

Discuss the **sensory cranial nerves** with reference to their function, their origin within the peripheral tissue and their destination within the Central Nervous System (CNS). (12)

QUESTION 5

Explain the four noteworthy exceptions within the nervous system where the blood-brain barrier does not remain intact. (8)

QUESTION 6

With the aid of a drawing, explain the posterior column sensory pathway, including the region of decussation. (10)

QUESTION 7

7.1. Sophie is suffering from a condition known as ventricular tachycardia in which her heart beats too quickly. Would an Alpha-blocker or a Beta-blocker help alleviate her problem? Explain your answer. (6)

7.2. Drugs that have effects similar to those of sympathetic activation are called sympathomimetic drugs. Which of the following would you **not** expect to observe in a person who has taken a sympathomimetic drug: (2)

- A. Sweating
- B. Increased heart rate
- C. Being out of breath
- D. Decreased blood pressure
- E. Increased blood sugar level

Subtotal: /60

TOTAL: /100