



FACULTY OF SCIENCE

DEPARTMENT OF ZOOLOGY

MODULE	PHS3A01 & PHS03A3 (VISCERAL ORGAN SYSTEMS)
CAMPUS	APK
EXAM	FINAL EXAM

DATE: 28 MAY 2019

SESSION: 12:30

ASSESSOR(S)

DR. J. DAS NEVES AND MRS S. DAHMS-VERSTER

INTERNAL MODERATOR

PROF. JC. VAN DYK

EXTERNAL MODERATOR

DR. P. BIPATH

TIME ALLOCATION: 140 MIN

TOTAL MARKS: 100

NUMBER OF PAGES INCLUDING THIS ONE: 5

INSTRUCTIONS:

- 1) Answer all the questions**
- 2) Number each question correctly**
- 3) Keep parts of the same questions together**
- 4) Return both question paper and answer sheets to invigilator**
- 5) Answer Section A and Section B in separate booklets**

Section A (Total Marks: 50)

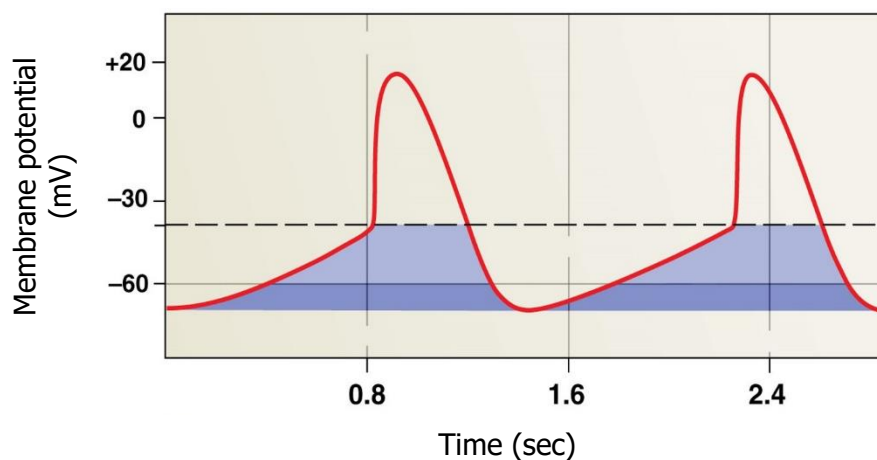
Question 1

- 1.1 Explain how blood functions in the restriction of fluid loss at an injury site. (3)
- 1.2 A patient who is suffering from chronic obstructive pulmonary disease has decreased oxygen saturation. Describe the changes that will occur in the blood composition due to this and explain what problems this could lead to. (5)
- 1.3 Discuss the disorder hemolytic disease of a newborn. (10 x ½ = 5)

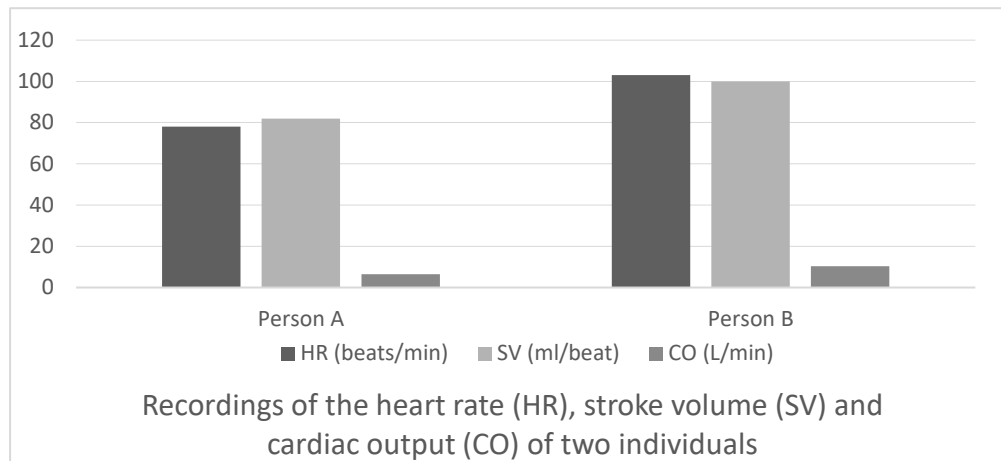
Subtotal [13]

Question 2

- 2.1 Explain why the sinoatrial node is known as the cardiac pacemaker. (2)
- 2.2 Discuss the importance of the delay of the electrical impulse at the atrioventricular node of the heart before moving to the ventricles. (3)
- 2.3 The graph below depicts changes in the cardiac cycle after stimulation of the autonomic nervous system (ANS). Name the division of the ANS that has been stimulated **and** describe the changes that occur in the cardiac cycle. (4)



- 2.4 The graph below depicts the recordings of the heart rate, stroke volume and cardiac output of two individuals. Epinephrine was administered to one of the individuals before the recordings were taken. Is this individual most likely to be Person A or Person B? Motivate your answer by explaining the effects of epinephrine on the cardiac system. (4)



Subtotal [13]

Question 3

- 3.1 Name and explain each factor that contributes to the total peripheral resistance of the cardiovascular system. (7)
- 3.2 During dehydration, the blood colloid osmotic pressure changes. Describe this change and explain how the body compensates for this change. (2)

Subtotal [9]

Question 4

- 4.1 Define external and internal respiration. (4)
- 4.2 Describe how the **majority** of carbon dioxide is transported in the blood where it is released into the alveolar space. (6)
- 4.3 Using a flow diagram, describe the changes that occur in the respiratory system to restore homeostasis after there has been an increase in arterial P_{CO_2} . (5)

Subtotal [15]

Section B (Total 50 Marks)

Question 5

- 5.1 Based on your understanding of the normal functioning of the esophagus and stomach, explain the physiology of acid reflux. (7)
- 5.2 Describe the role of normal intestinal bacteria in digestive functioning. (5)
- 5.3 Recent literature has shown that the majority of South African patients treated for colorectal cancer is Caucasian. Do you believe this to be an accurate representation of the people that suffer from colorectal cancer in South Africa? Explain your answer. (5)

Subtotal [17]

Question 6

- 6.1 A Physiology student is studying for an exam the following day. He buys 2 x 500-gram bags of salted popcorn and eats both bags in 2 hours. The popcorn contains 1058 mg of sodium (Na) per 100 grams of popcorn. What effect will this ingestion have on the functioning of his **urinary system**, including the latent effects on the rest of the body? (10)
- 6.2 Alcohol has been found to inhibit the release of Anti-Diuretic Hormone (ADH) after consumption. Describe the effect that increased alcohol use would have on the process of urine formation. (6)

Subtotal [16]

Question 7

- 7.1 Using your knowledge of the normal female reproductive cycle, explain the use of progesterone as a contraceptive substance. (10)
- 7.2 A significant part of the ovarian cycle occurs during foetal development and before the female reaches puberty. Explain the pre-pubescent section of the ovarian cycle. (7)

Subtotal [17]

Total Marks: 100