



FACULTY OF SCIENCE

DEPARTMENT OF ZOOLOGY

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

DATE: TBA

SESSION: TBA

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: 4

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 Name the hormone that is responsible for the regulation of red blood cell formation **and** describe four conditions that would cause the release of this hormone. (9)
- 1.2 Explain how the elements of blood defend against toxins and pathogens in the body. (6)

Subtotal [15]

Question 2

- 2.1 Explain how the action potential of cardiac muscles differs from the action potential of skeletal muscles. (2)
- 2.2 An increase in thyroid hormone would either increase, decrease or not change the following (motivate your answer for each): (8)
- a) Contractility of the heart (3)
 - b) End systolic volume (3)
 - c) Stroke volume (2)
- 2.3 Describe how an increase in afterload would affect the stroke volume of the heart. (3)

Subtotal [13]

Question 3

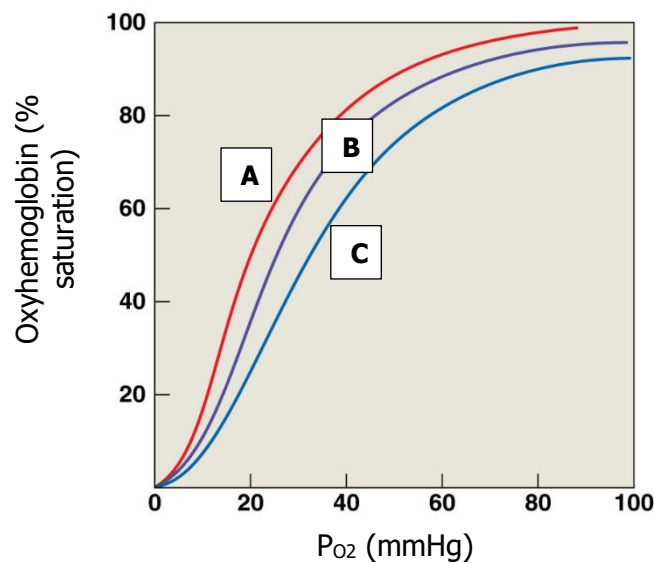
- 3.1 Define the following: (3)
- a) Blood colloid osmotic pressure (1)
 - b) Net filtration pressure (2)
- 3.2 Name and explain the condition that could develop from a decline in blood colloid osmotic pressure and explain why this would happen. (3)

- 3.3 The viscosity of blood plays an important role in the resistance of the cardiovascular system. Give one example of a condition that could affect the viscosity of blood and describe how the viscosity would change. (3)

Subtotal [9]

Question 4

- 4.1 Define “compliance” of the respiratory system and identify the factors that affect it. (4)
- 4.2 The graph below indicates changes in haemoglobin saturation at different blood pH levels. Explain how the pH is different in lines A and C when compared to line B and describe how the respective pH change will affect the haemoglobin saturation of the blood. (4)



- 4.3 Describe the effects of aging on the respiratory system. (5)

Subtotal [13]

Section B (Total 50 Marks)

Question 5

- 5.1 A patient with advanced cirrhosis has reached a point of complete liver failure. How would the failure of the liver affect the various digestive processes in the body? (10)
- 5.2 A healthy gut microbiome consists of approximately 300 – 500 species of bacteria. Describe the role of bacteria in the digestive system. (5)

Subtotal [15]

Question 6

- 6.1 What symptoms would you expect to see in someone with kidney failure? Justify your answer. (10)
- 6.2 The pirate Jack Sparrow is caught in a storm and his ship sinks. He manages to get onto a life raft and is stuck at sea without fresh water for 3 days. By referring to the functioning of the **urinary system**, explain why it would be dangerous for him to drink the surrounding seawater. (10)

Subtotal [20]

Question 7

- 7.1 Aging has significant effects on the reproductive systems of males and females. Compare the changes that occur in males and females as they become elderly. (10)
- 7.2 A female normally produces a single ovum per menstrual cycle. Males produce millions of active sperm cells in the same period. Why is it important for the male to produce a high number of sperm cells? (5)

Subtotal [15]

Total Marks 100