



<b><u>PROGRAM</u></b>	<b>: NURSING</b>
<b><u>SUBJECT</u></b>	<b>: HUMAN PHYSIOLOGY I</b>
<b><u>CODE</u></b>	<b>: HPH1B10</b>
<b><u>DATE</u></b>	<b>: NOVEMBER/DECEMBER EXAMINATION 3 DECEMBER 2016</b>
<b><u>DURATION</u></b>	<b>: 90 min</b>
<b><u>WEIGHT</u></b>	<b>: 50: 50</b>
<b><u>TOTAL MARKS</u></b>	<b>: 50</b>
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<b><u>EXAMINER</u></b>	<b>: P.C. DE LANGE- JACOBS</b>
<b><u>MODERATOR</u></b>	<b>: S EAGLETON</b>
<b><u>NUMBER OF PAGES</u></b>	<b>: 3 PAGES</b>
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<b><u>REQUIREMENTS</u></b>	<b>: 1 X EXAMINATION SCRIPT</b>
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**INSTRUCTIONS TO CANDIDATES:**

1. THIS QUESTION PAPER MUST BE RETURNED WITH YOUR EXAMINATION ANSWER SCRIPTS.
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**QUESTION 1**

1.1 Discuss the following aspects growth hormone:

1.1.1 Hypothalamic control 4 x ½ = (2)

1.1.2 The hypophyseal portal system 4 x ½ = (2)

1.1.3 The activity and effects of growth hormone 8 x ½ = (4)

1.2 List **4 (four)** symptoms of diabetes mellitus that are associated with more fats being mobilized when sugar cannot be used as cellular fuel. 4 x ½ = (2)

**[10]**

**QUESTION 2.**

2.1 Explain the difference between:

2.1.1 Anemia and polycythemia 2 x ½ = (1)

2.1.2 An antigen and an antibody 2 x ½ = (1)

2.1.3 Erythropoiesis and erythropoietin 2 x ½ = (1)

2.2 Discuss the effects of the shape of the red blood cell on its function.

6 x ½ = (3)

2.3 Mrs. Khumalo is pregnant for the first time. Her blood type is Rh- and her baby's blood has been established to be Rh+ positive. Ordinarily, the first such pregnancy causes no major problems, but baby Khumalo is born blue and anemic.

2.3.1 What is the condition called? (½)

2.3.2 Since it is Mrs. Khumalo's first pregnancy, how can you account for the baby's problem? (1)

2.3.3 Explain what course of treatment will be followed. (½)

2.3.4 Is there any treatment options available for a Rh- pregnant woman who is expecting a Rh+ baby? Please explain your answer in detail. 4 x ½ = (2)

**[10]**

### **QUESTION 3**

3.1 Calcium ions play an important role in cardiac contraction.

3.1.1 Discuss the contribution of calcium ions in the generation of an action potential in cardiac muscle cells.  $3 \times \frac{1}{2} = (1\frac{1}{2})$

3.1.2 What is the direct effect of the event described in 3.1.1 on cardiac muscle contraction?  $3 \times \frac{1}{2} = (1\frac{1}{2})$

3.1.3 What is the indirect effect of the event described in 3.1.1 on cardiac muscle contraction?

(1)

3.2 Explain the phases of the cardiac cycle for the ventricles only.  $4 \times 1 = (4)$   
[8]

### **QUESTION 4**

4.1 Changes in the diameter of blood vessels have a significant effect on blood flow. Discuss the two mechanisms that can change vessel diameter and refer to suitable examples.  $6 \times \frac{1}{2} = (3)$

4.2 Define the following processes that move materials across capillary walls:

4.2.1 Filtration  $(\frac{1}{2})$

4.2.2 Reabsorption  $(\frac{1}{2})$

4.2.3 Net filtration pressure (1)

4.3 Explain the structural and functional factors that assist with venous return.  $6 \times \frac{1}{2} = (3)$

[8]

### **QUESTION 5**

5.1 Use a flow diagram to **explain** the cardinal signs of inflammation.  $14 \times \frac{1}{2} = (7)$

5.2 Natural killer (NK) cells are responsible for immunological surveillance in the body. Explain the steps in NK cell activation and reaction that lead to the killing of cellular targets.

$5 \times 1 = (5)$

5.3 Explain the difference between active and passive immunity and provide **one** example for each.  $4 \times \frac{1}{2} = (2)$

[14]

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**MARKS: 50**

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