



<u>PROGRAM</u>	: NURSING
<u>SUBJECT</u>	: HUMAN PHYSIOLOGY I
<u>CODE</u>	: HPH1B10
<u>DATE</u>	: JANUARY SUPPLEMENTARY EXAMINATION JANUARY 2017
<u>DURATION</u>	: 90 minutes
<u>WEIGHT</u>	: 50: 50
<u>TOTAL MARKS</u>	: 50
<u>EXAMINER</u>	: P.C. DE LANGE- JACOBS
<u>MODERATOR</u>	: S EAGLETON
<u>NUMBER OF PAGES</u>	: 4 PAGES
<u>REQUIREMENTS</u>	: 1 X EXAMINATION SCRIPT

INSTRUCTIONS TO CANDIDATES:

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

QUESTION 1

1.1 Refer to the table below to provide short explanatory notes (**in your answer script**) for the blanks numbered a – f. (6)

	Prolactin	Oxytocin
Hypothalamic control	a) $4 \times \frac{1}{2} = (2)$	b) $4 \times \frac{1}{2} = (2)$
Target organ	c) $(\frac{1}{2})$	d) $(\frac{1}{2})$
Hormonal effect	e) $(\frac{1}{2})$	f) $(\frac{1}{2})$

1.2 Explain the cause and **cardinal signs** of diabetes mellitus. $10 \times \frac{1}{2} = (5)$

[11]

QUESTION 2

2.1 List **3 (THREE)** types of anemia and indicate the direct cause for each.

$6 \times \frac{1}{2} = (3)$

2.2 The erythrocyte (red blood cell) is a superb example of the close relationship between structure and function. Discuss the statement by referring **only** to:

- | | |
|---|------------------------------|
| 2.2.1 The lack of a nucleus | $2 \times \frac{1}{2} = (1)$ |
| 2.2.2 The lack of mitochondria | $2 \times \frac{1}{2} = (1)$ |
| 2.2.3 The lack of most other organelles | $(\frac{1}{2})$ |
| 2.2.4 The presence of a cytoskeleton | $(\frac{1}{2})$ |
| 2.2.5 The functional adaptation of hemoglobin | $2 \times \frac{1}{2} = (1)$ |

2.3 Red blood cell production:

2.3.1 Name the site for the production in adults. (½)

2.3.2 This production is stimulated directly by which hormone? (½)

2.3.3 Name the organs where this hormone (2.3.2) is formed. (1)

2.3.4 Name two triggers for the release of this hormone (2.3.2) (1)

[10]

Question 3

3.1 Explain the operation of the Atrioventricular (AV) valves. $8 \times \frac{1}{2} = (4)$

3.2 The conducting system of the heart:

3.2.1 Explain the fact that one of the properties of the conducting system is automaticity.

(1)

3.2.2 Give a physiological explanation for why the sino-atrial (SA) node is also known as the *cardiac pacemaker*. $2 \times \frac{1}{2} = (1\frac{1}{2})$

3.3 The quantity of blood each ventricle contains at the end of atrial systole is called _____? (½)

3. 4 Define cardiac output. (1)

3.5 What will the cardiac output (CO) be if the heart rate is 75 beats per min and the stroke volume is 80 ml per beat? Show all computations. (1)

[9]

QUESTION 4

4.1 Use **only** a graph with annotations to give an overview of the pressures changes within the cardiovascular systemic circulation. $8 \times \frac{1}{2} = (4)$

4.2 Discuss how vascular resistance contribute to the total peripheral resistance of the cardiovascular system. (4)

[8]

QUESTION 5

5.1 The thymus plays an important role in the development and maintenance of normal immunological defences. Please discuss this statement in detail by referring to:

5.1.1 The production and maturation of one group of lymphocytes. (1)

5.1.2 The formation and significance of the blood- thymus barrier. $2 \times \frac{1}{2} = (1)$

5.1.3 The role of the thymic hormones. ($\frac{1}{2}$)

5.1.4 Tolerance ($\frac{1}{2}$)

5.1.5 The names of the different types of the lymphocyte group that mature in the thymus and the main function for each type. $8 \times \frac{1}{2} = (4)$

5.2 Passive Immunity:

5.2.1 Explain passive Immunity (1)

5.2.2 Discuss the advantages and disadvantages of passive immunity in detail.

$2 \times 1 = (2)$

5.3 List **four** examples of the first line of body defenses. $4 \times \frac{1}{2} = (2)$

[12]

Marks: 50
