PROGRAM:	***NURSING AND OPTOMETRY***
SUBJECT	**PHYSIOLOGY**
CODE	**HPH 2B10, HPH2B20 AND HPH02B2**
DATE	**SUPPLEMENTARY JANUARY 2018**
DURATION	**180 Minutes (90 Minutes per section)**
WEIGHT	**50:50**
TOTAL MARKS	**SECTION A = 50** **SECTION B = 50**

EXAMINER:	**DR S EAGLETON**
MODERATOR	**MRS P DE LANGE JACOBS**
NUMBER OF PAGES	**4 PAGES**

INSTRUCTIONS	**THIS EXAM PAPER MUST BE RETURNED WITH THE EXAMINATION SCRIPT.**
REQUIREMENTS	**2 x EXAMINATION SCRIPTS**

SECTION A

NURSING HPH 2B10

OPTOMETRY HPH 02B2

Answer this section in the answer book provided. Number the questions exactly as they are numbered on the question paper.

Keep subsections of questions together.

Question 1

1.1 The following questions relate to hormones that have been derived from cholesterol.

1.1.1 Explain how these hormones will be transported in blood. (1)

1.1.2 Where will the receptors for these hormones be at their targets? (1)

1.1.3 What will the general response be if these hormones activate their target? (2)

1.2 The adrenal cortex has three distinct regions. Name the regions and relate the hormones produced in each region to their functions. 3 x 2 = (6)

[10]

Question 2

1.1 Discuss **four** general functions of blood. (4)

1.2 Describe how the complications associated with haemolytic disease of the new born develop. (6)

[10]

Question 3

3.1 Relate the peaks of an ECG (Electrocardiogram) to the conduction pathway of the impulse.
. 8 x ½ = (4)

3.2. Explain the opening and closing of the atrio-ventricular and semilunar valves. (4)

3.2. Relate the heart sounds to the relevant events during the cardiac cycle. (2)

[10]

Question 4

4.1 Use a flow diagram to illustrate the hormonal response that restore the blood pressure if there is a drop in blood pressure and volume. 10 x ½ = (5)

4.2 Describe the factors that will have an effect on blood flow. (5)

[10]

Question 5

5.1 Explain three functions of the spleen. (3)

5.2 Describe three ways by which Cytotoxic T cells destroy their targets. (3)

5.3 Explain the process whereby B cells are sensitized. (4)

[10]

Answer this section in a new answer book

SECTION B

NURSING HPH 2B20

OPTOMETRY HPH 02B2

Answer this section in the answer book provided. Number the questions exactly as they are numbered on the question paper.

Keep subsections of questions together.

Question 1

1.1 For each of the following statements decide whether they are **True** or **False** and if false correct the statement.

1.1.1 Boyle's law states that the pressure of a gas increases as its volume expands. (1)

1.1.2 The relationship between intrapleural pressure and atmospheric pressure determines the direction of airflow. (1)

1.1.3 Dalton's law states that in a mixed gas the individual gasses exert a pressure proportional to their abundance in the mixture. (1)

1.1.4 According to Henry's law the amount of gas in solution is inversely proportional to the partial pressure of the gas. (1)

1.1.5 Alveolar air and atmospheric air differ in composition. (1)

1.2 Use the data supplied to calculate the total lung capacity and the vital capacity. (2)

Tidal volume (TV)= 500 ml

Inspiratory capacity (IC)= 1700 ml

Expiratory reserve volume (ERV)= 1000ml

Residual volume (RV) = 1200ml

1.3 Distinguish between the events of external and internal respiration. (3)

1.4 Explain **how** and **why** a change in P_{CO2} will affect the haemoglobin-saturation curve (Bohr effect). (5)

[15]

Question 2

2.1 Describe how histological modifications of the stomach wall enhance the digestive processes in the stomach. (5)

2.2 Fully explain the chemical digestion and absorption of carbohydrates. 10 x ½ = (5)

[10]

Question 3

3.1 Urine formation involves filtration, reabsorption and secretion. For each of these processes:
- State where it takes place (3);
- Why it is important (4); and
- Which substances will be involved (3)? (10)

3.2 Discuss the role of the Juxtaglomerular apparatus in the regulation of the glomerular filtration rate. 10 x ½ = (5)

[15]

Question 4

4.1 Relate the ovarian hormones to the events occurring during the different phases of the uterine cycle. (10)

[10]

Total = 50