UNIVERSITY OF JOHANNESBURG

PROGRAM	:	*BIOKINETICS*
SUBJECT	:	**ANATOMY AND PHYSIOLOGY I**
CODE	:	**AAP01Y1**
DATE	:	NOVEMBER EXAMINATION 09 NOVEMBER 2019
DURATION	:	180 MINUTES
WEIGHT	:	50 : 50
TOTAL MARKS	:	140

EXAMINERS	:	B. Thomas E.K NCHABELENG E. SWANEPOEL
MODERATOR	:	I. PATEL S. ISHWARKUMAR
NUMBER OF PAGES	:	10 PAGES

INSTRUCTIONS	:	QUESTION PAPER MUST BE HANDED IN
REQUIREMENTS	:	5 X EXAMINATION SCRIPTS

INSTRUCTIONS TO CANDIDATES:

1. THIS PAPER CONSISTS OF 6 SECTIONS.
2. SECTION **A** MUST BE COMPLETED ON uLink. PLEASE LOGIN TO uLink → ASSESSMENTS → EXAM_2019 AND WAIT FOR FURTHER INSTRUCTIONS
3. SECTIONS **B** TO **F** MUST EACH BE ANSWERED IN A SEPARATE EXAMINATION SCRIPT PROVIDED.
4. MARK ALLOCATION FOR SECTION **A**: 1 MARK PER QUESTION.
5. MARK ALLOCATION FOR SECTIONS **B** TO **F**: ½ MARK PER FACT UNLESS INDICATED OTHERWISE.
6. THIS QUESTION PAPER MUST BE RETURNED WITH ALL YOUR EXAMINATION ANSWER SCRIPTS.

SECTION A: MULTIPLE CHOICE QUESTIONS

Multiple choice questions to be completed on uLink.

SECTION A SUBTOTAL: 40

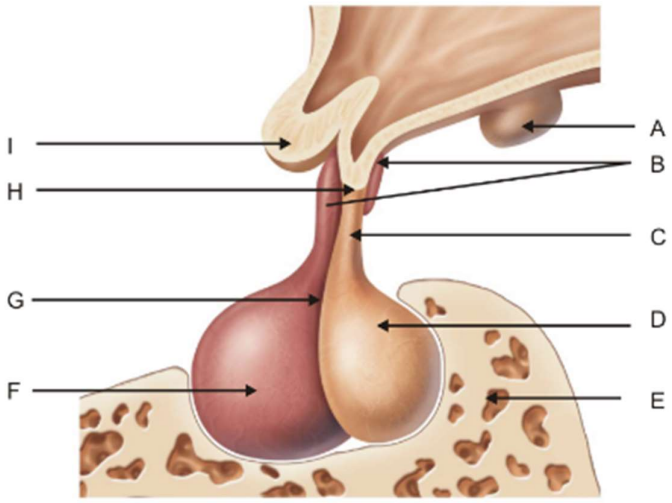
SECTION B: ANATOMY (E. Swanepoel)

(Endocrine system)

QUESTION 1

Refer to Figure 1 and answer the following questions:

FIGURE 1



1.1 Name the endocrine gland illustrated in Figure 1. (½)

1.2 Identify structures A to I. (4½)

1.3 Name the two nuclei that the axons of area D arise from. (1)

[6]

SECTION B SUBTOTAL: 6

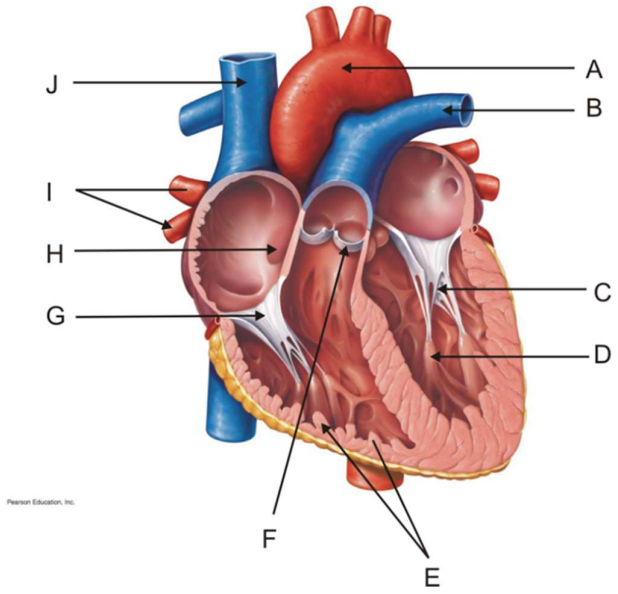
SECTION C: ANATOMY (EK Nchabeleng)

(Cardiovascular system, Urinary system, Respiratory system and Muscular system)

QUESTION 1

Refer to Figure 1 and identify structure A to I. **[4½]**

FIGURE 1



QUESTION 2

21. Describe the location of the "four corners" of the heart as seen on the anterior view of the thorax. (4)

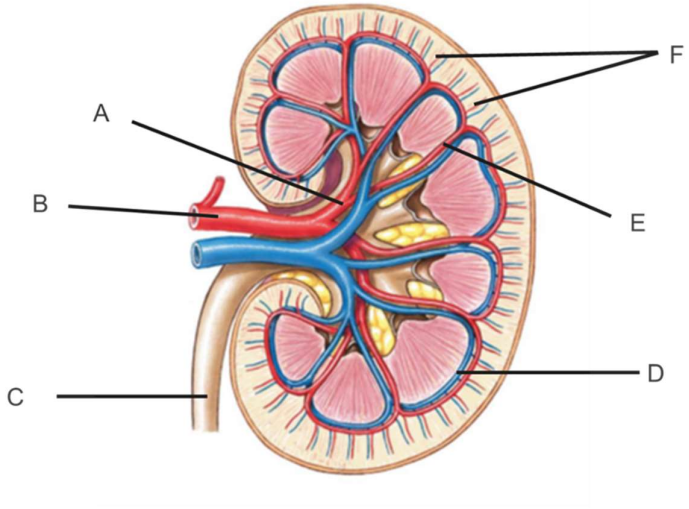
2.2. List and briefly describe the characteristics of the different types of capillaries. Also indicate in your answer which of these capillary types is the most permeable. (4)

[8]

QUESTION 3

Refer to Figure 2 and answer the questions that follow.

FIGURE 2



3.1 Identify structures A to F. (3)

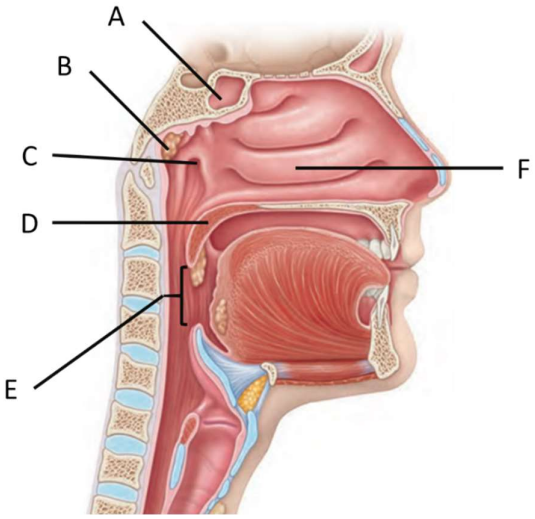
3.2 Compare and contrast a 'Juxtamedullary nephron' and a 'Cortical nephron' in a table format. (2)

[5]

QUESTION 4

Refer to Figure 3 and identify structures A to F. **[3]**

FIGURE 3



QUESTION 5

5.1 Describe the anatomy of the hard and soft palates. (4)

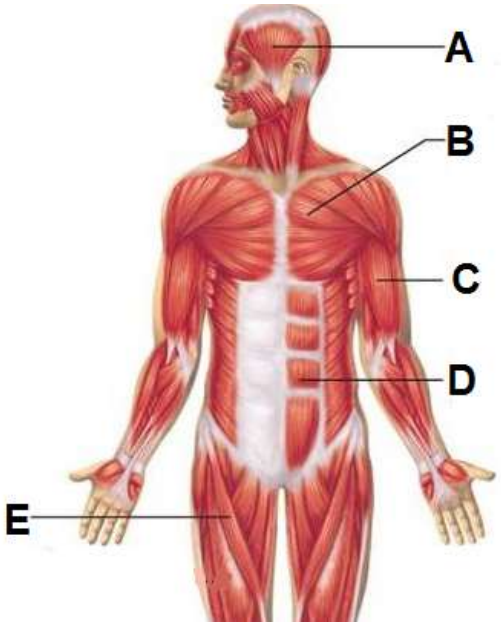
5.2 List the three divisions of the pharynx and name the specific type of respiratory epithelium that lines each division. (3)

[7]

QUESTION 6

Refer to Figure 4 and identify structures A to E. **[2½]**

FIGURE 4



SECTION C SUBTOTAL: 30

SECTION D: ANATOMY (S. Ishwarkumar)

(Nervous system and Senses)

QUESTION 1

Provide one descriptive characteristic and one example of each of the following types of structural classified neurons. **[2]**

1.1. Anaxonic

1.2. Multipolar

QUESTION 2

2.1. In a table format, name the foramina, primary function (sensory, motor or mixed) and function of the vestibulocochlear nerve. **[1½]**

QUESTION 3

3.1. Name the sulcus that separates the frontal lobe from the parietal lobe. (½)

3.2. Name the lobe of the brain where the visual cortical area is located. (½)

3.3. Name the secondary embryonic brain vesicle from which the cerebellum develops. (½)

[1½]

QUESTION 4

Name the structures that forms the following boundaries of the diencephalon. **[1½]**

4.1. Roof

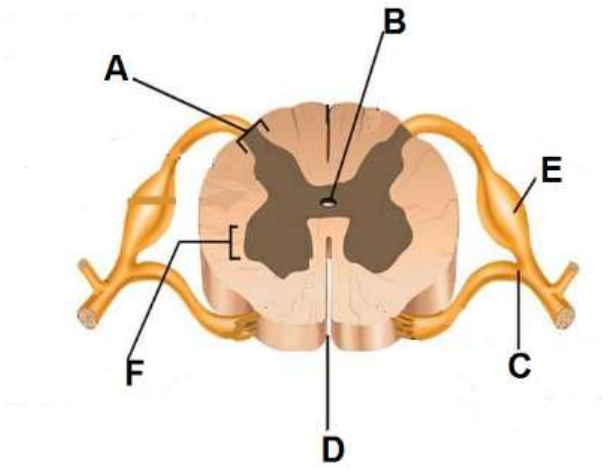
4.2. Lateral walls

4.3. Floor

QUESTION 5

Refer to **Figure 1** and answer the questions that follow.

Figure 1



5.1. Identify structures A to D. (2)

5.2. Name the type of fibres that pass through structure E. (½)

5.3. Name the nuclei located in structure F. (½)

[3]

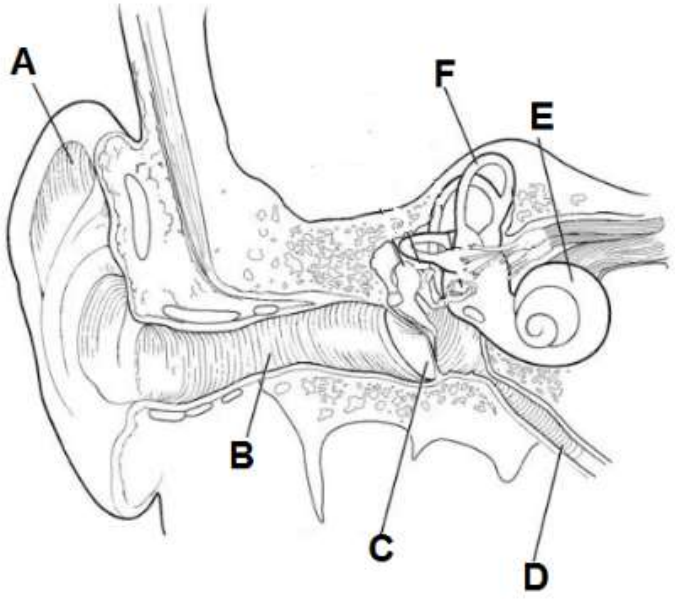
QUESTION 6

Provide a brief description of the commissural fibres of white matter located in the cerebrum. In your answer, include the anatomical structures that these fibres pass through). **[1½]**

QUESTION 7

Refer to **Figure 2** and identify structures A to F. **[3]**

Figure 2



SECTION C SUBTOTAL: 14

SECTION E: PHYSIOLOGY (I. Patel)

(Chemistry, Cell Osseous tissue, Skin, Nervous system, Endocrine system and Senses)

QUESTION 1: Intro to Physiology

1.1 List four functions of the skeletal system. (2)

1.2 List four function of the muscular system. (2)

[4]

QUESTION 2: Chemistry

2.1 Name and list the three important functions of the molecule that is formed when three fatty acids are attached to a glycerol molecule. (2)

2.2 Name four types of steroids found in the body. (2)

[4]

QUESTION 3: Cell

Fully describe facilitated diffusion. (4)

[4]

QUESTION 4: Osseous Tissue

4.1 Briefly explain how hormones affect bone loss in females as they age. (2)

4.2 Explain how cancer affects bone loss. (2)

[4]

QUESTION 5: Nervous System

Describe, in detail, the events that occur at a cholinergic synapse. (5)

[5]

QUESTION 5: Special Senses

Describe the pathway that taste sensations from the anterior two thirds of the tongue take to where they are finally processed in the brain. (4)

[4]

SECTION D SUBTOTAL: 25

SECTION F: PHYSIOLOGY (B. Thomas)

(Muscle, Blood, Cardiovascular system, Respiratory system and Urinary system)

QUESTION 1: Muscle

Discuss, in detail, the contraction cycle (sliding filament theory) of skeletal muscle. (5)

[5]

QUESTION 2: Blood

2.1 Name any **three** plasma proteins and provide **one** function of each. (3)

2.2 Describe how the cardiovascular system would attempt to correct a decrease in the availability of oxygen in the bloodstream. (2)

[5]

QUESTION 3: Cardiovascular system

Discuss, in detail, the events that occur during ventricular systole. Remember to include the pressure changes and heart valves in your answer. (5)

[5]

QUESTION 4: Respiratory system

Describe, in detail, the process of **expiration** that occurs during eupnea. (5)

[5]

QUESTION 5: Urinary system

5.1 Briefly describe the **three** vital processes performed by the distal convoluted tubule. (3)

5.2 Describe the effects of anti-diuretic hormone (ADH) on the collecting system of the nephron. (2)

[5]

SECTION E SUBTOTAL: 25

TOTAL MARKS: 140