



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

LIFE SCIENCES

SEPTEMBER CONTROL TEST 3 - 2024

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GRADE 11

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MARKS: 60

TIME: 1 HOUR

SCHOOL NAME:

EXAMINER :

MODERATOR :

SECTION A

QUESTION 1

Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1 to 1.4) in your ANSWER BOOK, for example 1.5 D.

1.1.1 Type of epithelium forming walls of air sacs in lungs

- A Cuboidal epithelium
- B Squamous epithelium
- C Columnar epithelium
- D Stratified epithelium

1.1.2 Inhaled air differs from exhaled air because it:

- A contains less carbon dioxide.
- B has more oxygen
- C has more carbon dioxide
- D contains less oxygen

1.1.3 A carcinogen is ...

- A a smoker
- B a cigarette
- C harmful substance causing cancer
- D non - poisonous substance

1.1.4 Which of the following is NOT a part of tubular reabsorption in a nephron?

- A Malpighian body
- B Proximal convoluted tubule
- C Distal convoluted tubule
- D Collecting ducts

(4X2) = (8)

- 1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.2) in your ANSWER BOOK.

1.2.1. Folded structures found on the inner membrane of a mitochondrion

1.2.2. The structure that controls the movement of digested food from the stomach to the duodenum

1.2.3. A disorder caused by a diet high in carbohydrates and extremely low in proteins

1.2.4. The tiny finger-like projections in the small intestine

1.2.5. The blood vessel in the neck that contains receptors which are sensitive to carbon dioxide levels in the blood

1.2.6. The muscular tube that connects the mouth cavity to the stomach.

(6x1) = **(6)**

- 1.3. Indicate whether each of the statements in COLUMN I applies to **A ONLY**, **B ONLY**, **BOTH A AND B** or **NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B**, or **none** next to the question number (1.3.1 to 1.3.4) in the ANSWER BOOK.

COLUMN I		COLUMN II	
1.3.1	Functional unit of the kidney	A:	Nephron
		B:	Medulla
1.3.2	Process involving breakdown of glucose to yield energy in cells	A:	Photosynthesis
		B:	Respiration
1.3.3	Hormone controlling glucose level	A:	Insulin
		B:	Glucagon

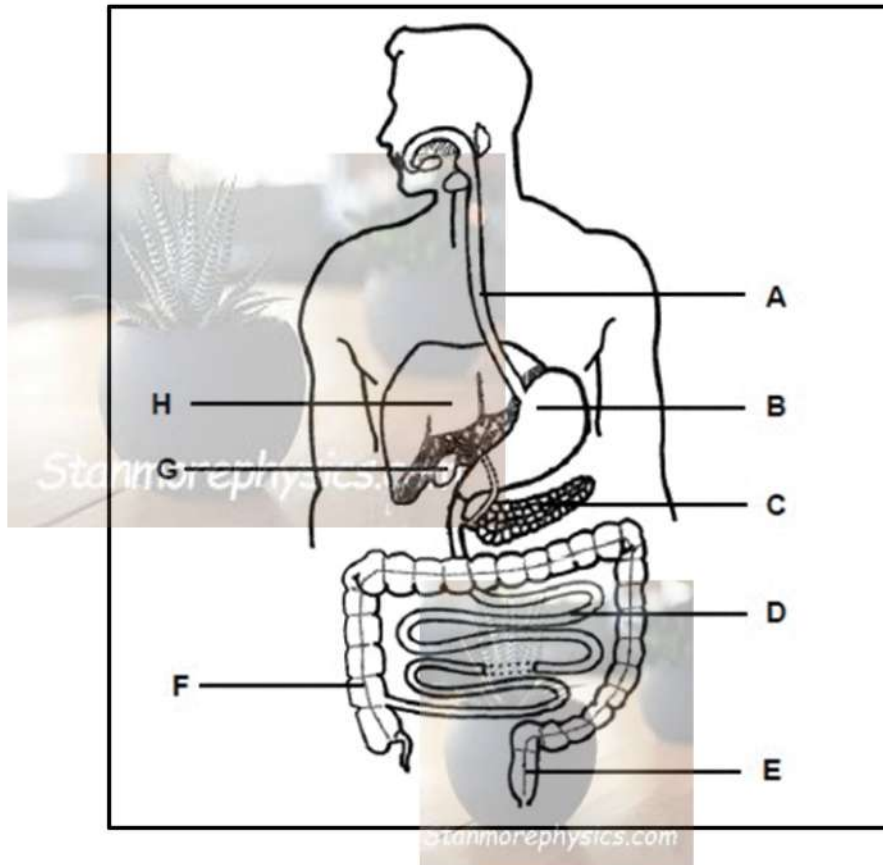
(3 x 2) = **(6)**

TOTAL SECTION A : 20 MARKS

SECTION B

QUESTION 2

2.1. Study the diagram below which shows the human digestive system



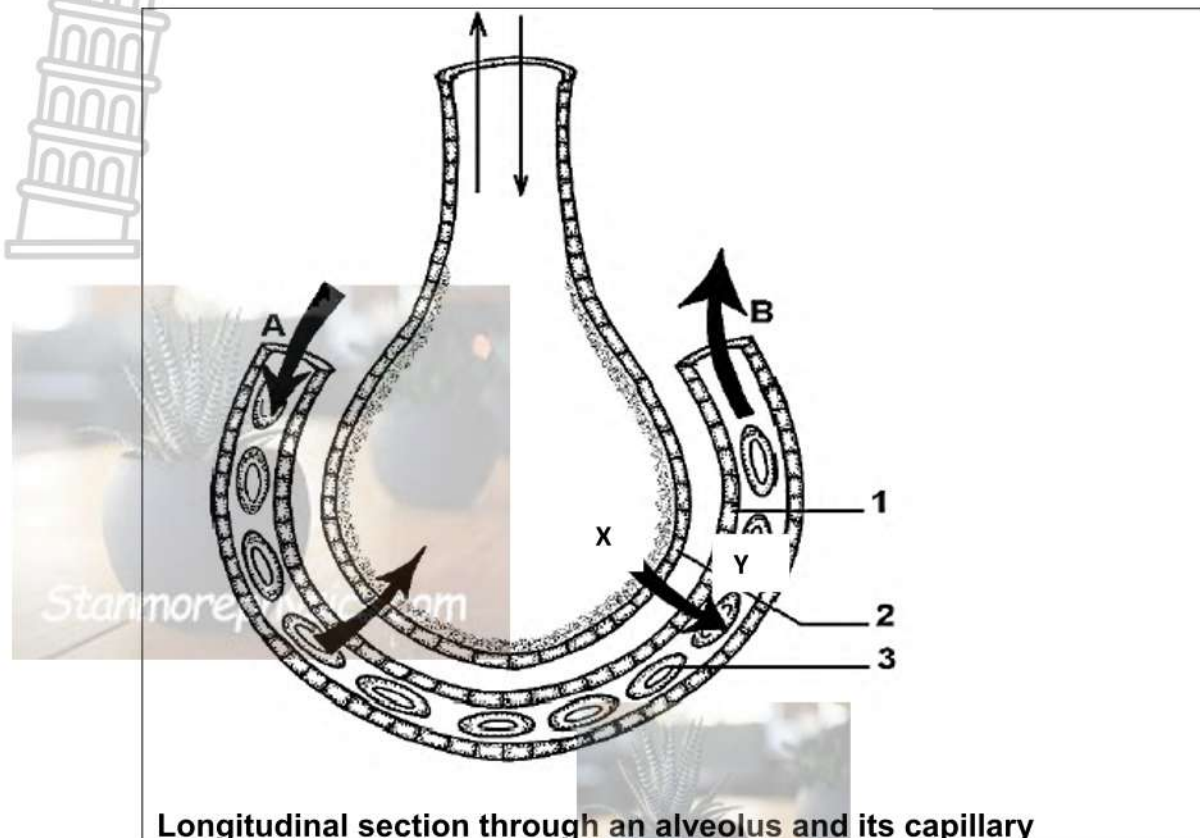
2.1.1. Label parts B, C, D and H respectively (4)

2.1.2 Write the letter of the part . . .

- (a) that stores bile. (1)
- (b) where most enzymes are active to digest food. (1)
- (c) where most water and mineral salts are absorbed. (1)

2.1.3 Give THREE functions of the part labelled H. (3)
(10)

2.2. Study the diagram below and answer the questions that follow.

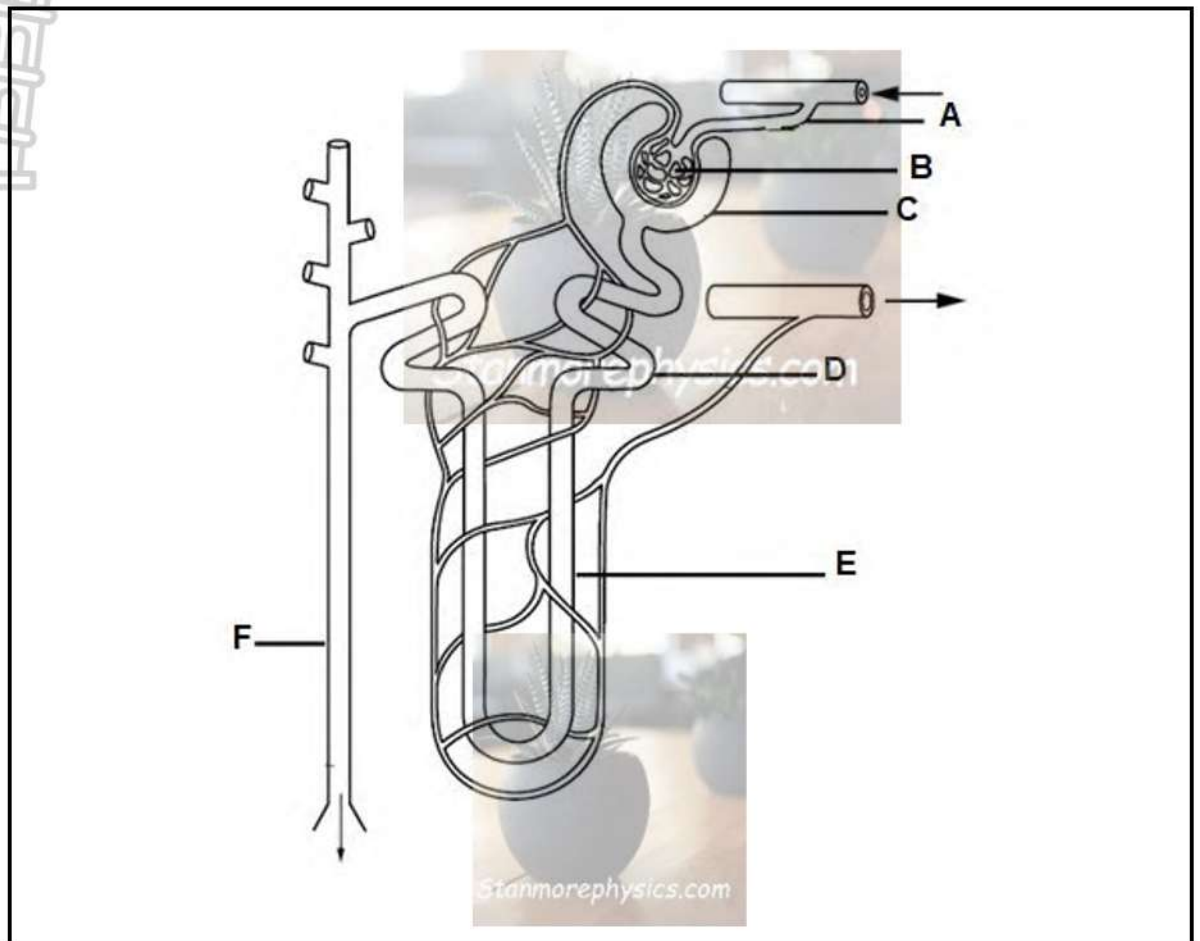


- 2.2.1 Identify the blood vessels labelled **A** and **B**. (2)
- 2.2.2 Identify label **3**. (1)
- 2.2.3 Name the process by which gas **X** and **Y** and move from alveolus to blood and vice versa. (1)
- 2.2.4 State **TWO** forms in which gas **X** is transported in the blood. (2)
- 2.2.5 Explain **TWO** ways, as seen in the diagram, in which the alveolus is structurally suitable for its function. (2)
- 2.2.6 Explain the effect of cigarette smoke on the : (2)
- a) bronchioles of the lungs (2)
 - b) ciliated columnar epithelium lining the bronchioles . (2)

(10)

QUESTION 3

3.1 The diagram below shows the functional unit of a kidney.



- 3.1.1 Identify the structure shown in the diagram above. (1)
- 3.1.2 Label the parts numbered **B**, **C**, **D** and **E**. (4)
- 3.1.3 Name the process of urine formation that takes place in **C**. (1)
- 3.1.5. Name the hormone : (1)
- (a) that regulates water reabsorption in E and F . (1)
- (b) that regulates salt reabsorption in E and F . (1)
- 3.1.6 Explain the importance of the small slits in the podocytes found in part C in the above diagram. (2)
- (10)**

- 3.2 A scientific investigation was conducted with 20 cyclists to determine whether caffeine in coffee can increase cellular respiration to yield more energy to muscle cells.

The procedure was as follows:

- The group of cyclists was given the first cup of coffee, containing no caffeine, to drink.
- The group then had to cycle for as long as possible at the same speed.
- They cycled around a 400 m track on level ground.
- The group was given a second cup of coffee, containing caffeine, to drink before cycling for the second time.

The table below shows the average time the group of cyclists was able to pedal after drinking decaffeinated coffee (coffee without caffeine) and drinking coffee with caffeine.

TYPE OF COFFEE	AVERAGE DURATION OF CYCLING (minutes)
Decaffeinated coffee (250 ml with no caffeine)	82
Coffee with caffeine (250 ml with caffeine)	123

- 3.2.1 Identify the:

- (a) Independent variable (1)
- (b) Dependent variable (1)

- 3.2.3 What is the relationship between caffeine consumption and the rate of cellular respiration in muscle cells of cyclists ? (2)

- 3.2.4 State the purpose of giving the cyclists decaffeinated coffee to drink during the investigation. (2)

- 3.2.5 The cyclists were NOT told whether or not the coffee they drank contained caffeine. Give ONE reason for this . (2)

- 3.2.6 State ONE way in which the scientists measured whether caffeine had an effect on the respiration rate in muscles of athletes . (2)

(10)

TOTAL SECTION B : 40 MARKS