

**PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**



**KILOLO DISTRICT COUNCIL
FORM FOUR JOINT PRE-MOCK EXAMINATION
BIOLOGY**

(For Both School and Private Candidates)

TIME: 3 Hours

APRIL, 2025

INSTRUCTIONS

1. This paper consists of sections A, B and C with a total of **Eleven (11)** questions.
2. Answer all questions in sections **A** and **B** and **two (2)** questions from section **C**
3. Section **A** carries **sixteen (16)** marks, section **B** **fifty-four (54)** marks and section **C** carries **thirty (30)** marks.
4. All writings should be in **blue** or **black** pen, except for diagrams that must be drawn in pencil.

SECTION A (16) MARKS

Answer **all** questions in this section.

1. For each of the items (i)-(x), choose the correct answer from among the given alternative and write its letter beside the item number in the answer sheet provided.
 - i. Respiration is a vital human life characteristic that leads into burning of oxygen resulting into production of adenosine triphosphate (ATP) from adenosine diphosphate (ADP). These processes occur in a cell particularly in the following organelles.
 - A. Endoplasmic reticulum.
 - B. Mitochondrion
 - C. Cell membrane
 - D. Cytoplasm
 - E. Nucleus
 - ii. During physical exercise Hussein experienced an increased rate in breathing. This is because breathing rate supplies extra:
 - A. Heat required by the active muscles.
 - B. Work required by the muscles for faster running.
 - C. Enzymes required by the active muscles for respiration.
 - D. Energy required by the active.
 - E. Oxygen required by the active muscles.
 - iii. A term which best describes a condition of the plant cell that has lost too much water is:
 - A. Creanation
 - B. Plasmolysis
 - C. Turgidity
 - D. Diffusion
 - E. Haemolysis
 - iv. Which of the following does not pass across the placenta from the mother to the foetus?
 - A. Antibodies
 - B. Red blood cells
 - C. Mineral salts
 - D. Vitamins
 - E. Hormones
 - v. Red eyes in *Drosophila* in genetics is an example of;
 - A. Continuous variation
 - B. Witchcraft
 - C. Discontinuous variation
 - D. Hypermetropia
 - E. Myopia

- vi. A patient has been diagnosed with low level of blood sugar. Which of the following hormone will be recommended to regulate the victim's sugar level
- A. Vasopressin
 - B. Insulin
 - C. Glucagon
 - D. Aldosterone
 - E. Oxytocin
- vii. The number of chromosomes in the human fertilized egg that will grow into a male child is
- A. 22pair + xx
 - B. 22pair + xy
 - C. 22pair + y
 - D. 22pair + x
 - E. 23pair + xy
- viii. In an experiment using a compound microscope, objects under observation were not seen properly due to poor light reflection. Which part of microscope will be affected?
- A. Diaphragm
 - B. Mirror
 - C. Objective lens
 - D. Coarse adjustment knob
 - E. Stage
- ix. In punnet square diagrams, the homozygous recessive genotype is represented by.
- A. One capital letter and one small letter of the same letter in the alphabet.
 - B. Two small letters of the same letter in the alphabet
 - C. Two small letters of different letters in the same.
 - D. Two capital letters of the same letter in the alphabet.
 - E. Two small letters and two capital letters of different letters.
- x. Which of the following is the general reason for why organisms need to remove waste products from the body?
- A. To reduce the amount of sugar in the body
 - B. To help to clean internal organs
 - C. To help the digestion system to proceed
 - D. To maintain homeostatic condition in the body
 - E. To remove extra food from the stomach

2. Match the items in list A with the responses in list B by writing the letter of the correct response in the answer sheet(s)

LIST A	LIST B
i. Renal vein and ureter leave the kidney and the renal artery enters the kidney ii. It is surrounded by fatty tissue which helps to protect the kidney from the damage iii. It has tubular parts that contains loop of Henle's and blood vessels iv. Receives urine drained from the nephrons through the collecting duct. v. It is where the Bowman's capsule, glomeruli, proximal and distal convoluted tubules and blood vessels vi. Functional units where the kidney's main functions are performed.	A. Collecting duct B. Kidney nephrons C. Renal hilus D. Capsule E. Renal artery F. Cortex G. Renal vein H. Renal pelvis I. Medulla J. Ureter

SECTION B (54 marks)
Answer all questions in this section

3. (a) During puberty young people undergo emotional changes, they may also experience strong emotional such as anger or anxiety and sudden mood changes, write five(5) important measures that can help adolescents to behave well.
 (b) You have a short dialog with your young brother at home, write four things which you will consider when making it.
4. (a) Explain four adaptive features of urinary system
 (b) (i) In which way is renal calculi detected?
 (ii) What is the effect of untreated renal calculi?
 (iii) What is the treatment of the renal calculi?
 (c) Write two causes of renal failure
5. (a) What are the distinctive features of the filicinophytes? Give three points
 (b) With the aid of a well labeled diagram, explain four characteristics of fern plants.
6. (a) Differentiate between meiosis and mitosis by using the following factors.
- Division cycle
 - Occurrence of cytokinesis
 - Crossing over
 - Function

- Types of cells that are involved
 - (b) Use the knowledge of germination in flowering plants; explain four parts of the seed
7. (a) Mwanahamis is the old women having four children she always buys some drugs to the nearest shop and she is careless on taking care those drugs bought, advise her the correct ways of handling those drugs (Give four points).
- (b) What is the role of the following hormones?
- i. Hydrocortison
 - ii. ADH
 - iii. Thyroxine
 - iv. Parathyroid hormone
 - v. Aldosterone
8. (a) State the second Mendelian law of inheritance
- (b) In Rosa alba plants red flower is controlled by an allele G whereas white flower is controlled by an allele B. In an experiment, red and white flowered Rosa alba plants were crossed and all F₁ plants produced had pink flowers
- i. Explain why such observations
 - ii. When two of F₁ plants were self-crossed, 1000 F₂ plants were produced. By the help of illustration show how many of F₂ plants will have;
 - Red flowers
 - Pink flowers
 - White flowers

SECTION C (30 Marks)

Answer **only two** questions from this section

9. The development of the plants involves different stages from the young one to the adult or old stage; explain five developmental stages of the plant.
10. One of the airborne infections and diseases which affect human respiratory system especially during cold weather condition is Asthma.
- i. What are the possible causes of the disease? Give four points
 - ii. What are the possible signs of the disease? Give three points
 - iii. How can the disease be prevented/controlled? Give four points
11. The mother's breasts develop the capacity for milk secretion midway during pregnancy, whereas the hormones prolactin and oxytocin ensure milk production and secretion during breast-feeding. Why it is advised to breast-feed rather than bottling. Support it by giving seven points.