

**JULY 2023**

- 1) This paper consists of sections A, B and C with a total of eleven (11) questions.
- 2) Answer all questions in section A and B and **ONLY two (2)** questions from section C in which question number **nine (9) is compulsory**
- 3) Section A carries sixteen (16) marks, section B carries fifty-four (54) marks and section C carries thirty (30) marks.
- 4) Cellular phones and any unauthorized materials are NOT allowed in the examination room
- 5) All drawings should be in pencil

### SECTION A (16 MARKS)

1. For each of the item (i-x) choose the correct answer from the given alternatives and write its letter beside the item number in the answer sheet provided.
- (i) A strong tissue that holds muscles to bones at the joint is:-
- A. Ligament      D. Tendon
  - B. Cartilage      E. Blood
  - C. Connective tissue
- (ii) When a person suddenly sees a lion 'which hormone is provided by the body to prepare for fight or flight?
- A. Anti-diuretic hormone      D. Progesterone hormone
  - B. Adrenalin hormone      E. Insulin hormone
  - C. Aldosterone hormone
- (iii) Which of the following is likely to happen if blood supply to brain is poor in man
- A. Vomiting      D. Increase in heart beat
  - B. Shock      E. Fainting
  - C. Snoring
- (iv) Urine does not contain glucose because
- A. The kidney tubule does not allow glucose to pass through
  - B. Glucose is respired before reaching the collection duct
  - C. Glucose passes back into the blood stream from the tubules
  - D. Blood reaching the kidneys does not contain glucose
  - E. Glucose is absorbed in the liver and used completely by the body
- (v) A food sample X turned blue black when treated with iodine solution. The detected food substance in sample X performs which function in the human body?
- A. Initiate digestion of food
  - B. Supplies the body with sufficient water
  - C. Builds up the body
  - D. Strengthen body immunity by fighting with infections
  - E. Provides the body with energy
- (vi) Crossing unknown genotype of an individual with a homozygous recessive parent is regarded as
- A. Monohybrid cross      D. Test cross
  - B. Dihybrid cross      E. Vigor cross
  - C. Back cross
- (vii) When the first day of the menstruation is 8 April on which date a woman of 28 days cycle is mostly likely to ovulate
- A. 26 March      C. 5 May      D. 16 April
  - B. 22 April      E. 21 April
- (viii) After a period of vigorous exercises, you would expect blood flowing from muscles to have.
- A. More carbon dioxide, more oxygen and more glucose
  - B. Less carbon dioxide, less oxygen and less glucose

- C. More carbon dioxide, less oxygen and less glucose  
 D. Moderate carbon dioxide, less oxygen and less glucose E. More carbon dioxide, loss oxygen and more glucose
- (ix) A pea plant can either be tall or short stem. When a tall stem pea plant was pollinated with a short stem pea plant, the offspring produced were 200 tall stem plants and 200 short stem plants. Which of the following represent the genotype of the parents?
- A. TT x Tt      C. Tt x tt  
 B. Tt x Tt      D. TT x tt      E. tt x tt
- (x) A rapid growth in plants takes place mainly in:
- A. Lungs      C. Roots  
 B. Cambium D. Shoot and root tip E. Stem

2. Match the description of LIST A with corresponding terminologies in LIST B by writing the letter of the correct response beside the item number in the answer sheet provided.

| LIST A                                                                                           | LIST B                                      |
|--------------------------------------------------------------------------------------------------|---------------------------------------------|
| (i) Transformation of a seed embryo into a seedling                                              | A. Determinate growth                       |
| (ii) An opening that allows the entry of water and oxygen into a seed during germination process | B. Indeterminate growth                     |
| (iii) Growth ceases (stops) when a certain in age is reached                                     | C. Apical dominance                         |
| (iv) Internal factors necessary for seed germination                                             | D. Hilum                                    |
| (v) A period of reduced metabolic activities in the seed                                         | E. Micropyle                                |
| (vi) Inhibits the growth of lateral buds during plant growth                                     | F. Seed dormancy                            |
|                                                                                                  | G. Seed germination                         |
|                                                                                                  | H. Enzyme and hormone                       |
|                                                                                                  | I. Optimum temperature, moisture and oxygen |

### SECTION B (54 MARKS)

Answer **all** questions from this section. Each question carries 9 marks

3. There is a very big debate to why biology should not be taken as an optional subject like other optional subjects at ordinary secondary school. You as an expert in biology state reasons to why biology should be studied by all O' level students (six points)
4. Water and salt are needed in constant optimal amounts for effective and proper functioning of the body.
- (a) Explain three factors which affect the content of the water and salt the human body.
- (b) Mention the two hormones which are responsible for regulation of water and salts in the body

5. The headmaster of ANGAZA Secondary School was served with hot coffee in a glass. He lifted up the glass of coffee and suddenly dropped it due to its extreme hotness causing it to break into pieces
- (i) Name the action which took place in the headmaster's body
  - (ii) Suggest the name of the pathway followed during this action
  - (iii) Draw a well labeled diagram showing components of the nervous coordination for the action which took place the headmaster 's body.
  - (iv) State the significance to the human body of the action named in (i) above
- 6.(a) Explain how a plant cell prevent bursting when placed in hypotonic solution
- (b) What will be the effect in a recipient's blood when he / she has been transfused an incompatible blood from the donor
  - (c) State any three precautions to be taken during blood transfusion
7. (a) A Research conducted on human post-natal growth and development revealed that the rate of the physical deterioration in some people are higher than other people of the same age As a biologist mention the causes of physical deterioration of the human body (3points)
- (b) Outline the changes which take place inside the seed before it germinates
8. (a) State Mendel's first law of the inheritance
- (b) Give any four differences between the DNA and RNA
  - (c) Bean seeds placed in a closed bottle containing cold water swollen and started rotting instead of germinating why?

### **SECTION C (30 marks)**

Answer two questions from this part including question number 9

9. Imagine you are a guest speaker on the workshop on Birth control methods at Kibaoni village, Educate the workshop participants on birth control methods which
- (a) Prevent the union of gametes (4 points)
  - (b) Suppress the formation or release of gametes (2 points)
  - (c) Prevent implantation of the zygote (1 point)
10. The body of the human being is made up of frame work of interconnected bones which play crucial roles to the body. Justify the statement (4 points)
11. Suppose you are invited to take part in the debate with the motion which says "scientists should find a way of getting rid of all bacteria" Give seven (7) views the motion.