TEVETA

Technical Education, Vocational and Entrepreneurship Training Authority

DIPLOMA IN SCIENCE LABORATORY TECHNOLOGY

LEVEL 6 YEAR I EXAMINATION

FINAL INTEGRATED SUMMATIVE EXAMINATION

SITTING: APRIL /MAY 2026

SUBJECT: FOUNDATION BIOLOGY THEORY

TIME: THREE (3) HOURS **TOTAL MARKS: 100**

PASS MARK: 50

INSTRUCTIONS TO CANDIDATE

1. Write your Examination number and National Registration Card (NRC) number on the answer booklet provided. Ensure you append your signature in the space provided on the answer booklet.
2. Write the ANSWER SCRIPT SERIAL NUMBER on the examination register and on the entry slip.
3. This paper has SEVEN (7) questions. Question ONE (1) is compulsory. Answer FOUR (4) questions from the remaining SIX (6) questions.
4. Diagrams may be used where necessary to clarify your answer.
5. Cellphones and programmable calculators are not allowed in the examination room.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD SO.

QUESTION 1 (COMPULSORY)

(a) Water is a transparent, odourless and nearly colourless chemical substance.

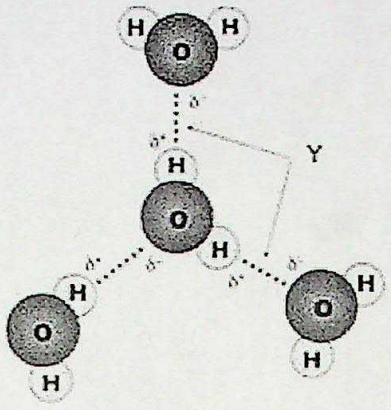


Figure 1

(i) Identify the bond labelled **Y.** **[1 mark]**

(ii) Explain the polarity of a water molecule. **[3 marks]**

(iii) Distinguish cohesive from adhesive properties of water. **[4 marks]**

(b) Describe the effect of the following environmental factors on the rate of transpiration

(i) Light. **[4 marks]**

(ii) Humidity. **[4 marks]**

(iii) Wind. **[4 marks]**

TOTAL: 20 MARKS

QUESTION 2

(a) State the three **(3)** types of cells that make up ground tissue. **[3 marks]**

(b) Explain five **(5)** ways plants are adapted to carry out insect pollination. **[10 marks]**

(c) Describe seven **(7)** general characteristics of organisms in the phylum Arthropoda. **[7 marks]**

TOTAL: 20 MARKS

QUESTION 3

(a) Explain the effects of the following factors on enzyme activity.

(i) Presence of an inhibitor. **[4 marks]**

(ii) Substrate concentration. **[4 marks]**

(b) Describe the lock and key model in enzyme-controlled reactions. **[4 marks]**

(c) Explain the significance of enzymes in commercial processes. **[8 marks]**

TOTAL: 20 MARKS

QUESTION 4

(a) State the functions of the following parts of the cell.

(i) Smooth Endoplasmic reticulum. **[2 marks]**

(ii) Golgi apparatus. **[2 marks]**

(b) Describe the osmotic effect of placing an animal cell in a hypertonic solution. **[8 marks]**

(c) Relate the structural features of the cell membrane to its functions. **[8 marks]**

TOTAL: 20 MARKS

QUESTION 5

(a) The cell cycle is an important phase in the life of a cell.

(i) State the importance of cell division. **[2 marks]**

(ii) Explain the importance of a crossing over in meiosis. **[2 marks]**

(iii) Differentiate mitosis from meiosis. **[6 marks]**

(b) Describe the stages of mitosis during cell division. **[10 marks]**

TOTAL: 20 MARKS

QUESTION 6

(a) Define photosynthesis. **[2 marks]**

(b) Describe the main chemical changes that occur during the light reaction of photosynthesis. **[8 marks]**

(c) Explain the functions of the named tissues of the leaf. **[10 marks]**

TOTAL: 20 MARKS

QUESTION 7

(a) Describe the adenosine triphosphate (ATP) molecule. **[4 marks]**

(b) Distinguish alcoholic fermentation from lactic fermentation. **[6 marks]**

(c) Explain five **(5)** uses of energy in living cells. **[10 marks]**

TOTAL: 20 MARKS