**BIOLOGY SCHEMES OF WORK**

**FORM FOUR 2016**

**TERM I**

**REFERENCES:**

1. KLB Secondary Biology Form 4 Students Book KLB BK 4
2. Longman Biology Book 4
3. Longhorn Biology Book 4
4. Principles of Biology Vol 2 (POB VOL 2)

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| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 |  | **SCHOOL OPENING AND PRACTICAL** | | | | |  |
| 2 | 1&2 | Genetics  Introduction  Types of variation  Causes of variation | **By the end of the lesson, the learner**  **should be able to:-**  - Define genetics and variation  - Differentiate between continuous and  discontinuous variation  - Explain causes of variation | Description  Demonstration of variation  using students  Explanation  Notes taking  Question and answer | Chart with a graph of  variation | KLB BK 4 Pg 1-4  Longman BK 4  Pg 1-6  Longhorn BK 4  Pg 1-5 |  |
|  | 3&4 | DNA and its structure  Role of DNA  Structure of the  Chromosome | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the structure of the  chromosome  - Describe role of DNA | Explanation  Drawing  Questions | Charts with DNA  structure | KLB BK 4 Pg 6  Longman BK 4  Pg 6-13  Longhorn BK 4  Pg 6-8 |  |
|  | 5 | Replication of DNA | **By the end of the lesson, the learner**  **should be able to:-**  - Describe the replication of DNA  - Explain the arrangement of bases in  the DNA molecule | Explanation  Description  Notes taking  Question and answer | Chart showing DNA  Replication | KLB BK 4 Pg 9-10  Longman BK 4  Pg 15-16 |  |
| 3 | 1&2 | Chromosome  behaviour during cell  division | **By the end of the lesson, the learner**  **should be able to:-**  Describe chromosome behaviour at  each stage of cell division | Modeling of chromosome  during cell division  Group discussion | Brightly coloured  thread, pair of scissors,  white manilla paper,  transparent cello tape | KLB BK 4 Pg 5-6  Longman BK 4  Pg 9-10 |  |
|  | 3 | Law of heredity  Monohybrid  inheritance experiments | **By the end of the lesson, the learner**  **should be able to:-**  Describe 1st law of heredity from  Mendel’s experiments on monohybrid  inheritance | Description  Notes taking  Questions | Chalkboard illustration  on Mendel’s  experiment | KLB BK 4 Pg 11-12  Longman BK 4  Pg 18-20 |  |
|  | 4 | Monohybrid inheritance | **By the end of the lesson, the learner**  **should be able to:-**  Define monohybrid inheritance using  genotype, phenotype, homozygous,  heterozygous | Explanation  Description  Notes taking  Questions | Chart with genetic  Crosses, chalkboard  workings, sample  questions | KLB BK 4 Pg 13-14  Longman BK 4  Pg 21-22 |  |
|  | 5 | Monohybrid  Inheritance | **By the end of the lesson, the learner**  **should be able to:-**  Describe the monohybrid inheritance  using genetic crosses & punnet square | Explanation  Description  Notes taking | Sample quiz, workings  of genetic crosses and  punnet squares | KLB BK 4 Pg 14-15  Longman BK 4  Pg 21-24 |  |
| 4 | 1&2 | Probability  Random fusion of  Gametes | **By the end of the lesson, the learner**  **should be able to:-**  Work out probability of the outcome of  gamete fusion | Demonstrate probability  by tossing a coin  Explanation  Discussion | Coins, 2 sets of  Coloured beads or  maize and beans,  plastic container | KLB BK 4 Pg 16  POB VOL 2  Pg 212 |  |
|  | 3 | Complete and  Incomplete dominance  Test and back crosses  Selfing experiments | **By the end of the lesson, the learner**  **should be able to:-**  - Describe complete and incomplete  Dominance  - Explain back cross and test cross;  selfing experiments | Explanation  Notes taking  Discussion | Genetic cross diagrams | KLB BK 4 Pg 19-20  Longman BK 4  Pg 22-23 |  |
|  | 4 | ABO Blood groups  and Rhesus factor | **By the end of the lesson, the learner**  **should be able to:-**  Explain inheritance of ABO blood  groups and rhesus factor | Explanation  Notes taking  Discussion | Crosses diagrammatic  on inheritance of blood  groups | KLB BK 4 Pg 20-22  Longman BK 4  Pg 25-26 |  |
|  | 5 | Sex determination in  Humans | **By the end of the lesson, the learner**  **should be able to:-**  - Define heterogametic and  homogametic natures  - Describe sex determination in humans | Discussion  Notes taking  Genetic crossing | Genetic crosses on  Chalkboard | KLB BK 4 Pg 23-24  Longman BK 4  Pg 26-29 |  |
| 5 | 1&2 | Linkage  Sex linkage | **By the end of the lesson, the learner**  **should be able to:-**  - Define gene linkage  - Describe sex linked characteristics  - Explain effects of crossing over on  sex linked genes | Description  Notes taking  Discussion | Diagram of  Haemophilia  Inheritance  Pedigree diagram | KLB BK 4 Pg 25-26  Longman BK 4  Pg 29-34 |  |
|  | 3&4 | Mutation  Causes  Types  Chromosomal mutations | **By the end of the lesson, the learner**  **should be able to:-**  - State types of mutations  - Explain causes of mutation | Description  Drawing  Notes taking  Discussion | Diagrams showing  Types of chromosomal  mutations | KLB BK 4 Pg 28-32  Longman BK 4  Pg 35-39 |  |
|  | 5 | Gene mutations or  Point mutations | **By the end of the lesson, the learner**  **should be able to:-**  - Define gene mutation  - Describe various types of gene  mutation | Description  Notes taking  Discussion | Diagrams of gene  mutations | KLB BK 4 Pg 33-34  Longman BK 4  Pg 41-44 |  |
| 6 | 1&2 | Disorders due to gene  mutations | **By the end of the lesson, the learner**  **should be able to:-**  Name and describe disorders due to  gene mutations | Discussion  Notes taking  Description | Pedigree diagram  showing inheritance  of albinism | KLB BK 4 Pg 35-38  Longman BK 4  Pg 45-49 |  |
|  | 3 | Applications of  Genetics  Plant and animal  breeding | **By the end of the lesson, the learner**  **should be able to:-**  Explain application of genetic  knowledge in breeding | Discussion  Notes taking  Questions | Sample questions  Sample of products | KLB BK 4 Pg 39-40  Longman BK 4  Pg 50-51 |  |
|  | 4&5 | Blood transfusion  Genetic counseling  and engineering | **By the end of the lesson, the learner**  **should be able to:-**  Explain application in blood transfusion,  Counseling and engineering (farming) | Discussion  Notes taking  Questions | Sample questions | KLB BK 4 Pg 40-41  Longman BK 4  Pg 21-24 |  |
| 7 | 1&2 | Genetic engineering  - Medicine  - Cloning  - Human genome | **By the end of the lesson, the learner**  **should be able to:-**  Explain how genetics engineering is  used in medicine, gene therapy, cloning,  human genome | Discussion  Questions  Explanation  Notes taking | Photos  Newspaper cuttings  etc | KLB BK 4 Pg 42-45  Longman BK 4  Pg 55-56 |  |
|  | 3 | Evolution theories of  Origin of life | **By the end of the lesson, the learner**  **should be able to:-**  - Define evolution  - Explain theories of origin of life | Discussion  Questions  Explanation  Notes taking | The Bible and or  Koran | KLB BK 4 Pg 49-50  Longman BK 4  Pg 60-61 |  |
|  | 4&5 | Evolution evidences  - Fossil records  - Geographical  Distribution | **By the end of the lesson, the learner**  **should be able to:-**  - State evidences of evolution  - Explain fossil records and  geographical distribution | Discussion  Notes taking  Q/A | Photograph of fossils &  Continents or the globe | KLB BK 4 Pg 51-57  Longman BK 4  Pg 62 |  |
| 8 | 1&2 | Comparative  Embryology and  Anatomy, Serology,  Cell biology | **By the end of the lesson, the learner**  **should be able to:-**  Define and describe comparative  embryology, anatomy and cell biology  as evidence of evolution | Discussion  Notes taking  Description | Photos of analogous  and homologous  structures and  vertebrate embryos | KLB BK 4 Pg 59-65  Longman BK 4  Pg 67-70 |  |
|  | 3&4 | Theories of evolution  Darwin and Lamarck’s  Theories | **By the end of the lesson, the learner**  **should be able to:-**  Describe Darwin’s and Lamarck’s  theories of evolution | Discussion  Notes taking  Q/A | Photographs of  Organisms that are  believed to have  evolved | KLB BK 4 Pg 69-70  Longhorn BK 4  Pg 56-60 |  |
|  | 5 | Natural selection in  Action  - Peppered moth  - Resistance to  chemicals | **By the end of the lesson, the learner**  **should be able to:-**  Explain how natural selection is in  action through emergence of new  strains of bacteria resistant to  antibiotics/insects to insecticides | Discussion  Explanation  Notes taking  Questions and answers | Flow diagram showing  mutation in bacteria | KLB BK 4 Pg 70-72  Longhorn BK 4  Pg 58-60 |  |
| 9 | 1&2 | Reception, response  and coordination in  plants and animals | **By the end of the lesson, the learner**  **should be able to:-**  - Define stimulus, response and  irritability  - Describe how a stimulus brings about  a certain response | Definition  Discussion  Demonstration  Notes taking | Pairs of students,  Photos of plants  showing responses  Real plants showing  tropism | KLB BK 4 Pg 73-74  Longman BK 4  Pg 82-83 |  |
|  | 3&4 | Tactic Responses | **By the end of the lesson, the learner**  **should be able to:-**  Describe chemotaxis, phototaxis and  their survival values giving examples | Group discussion  Observing termites or  ants moving away/  towards some chemicals | 2 compation chambers  Dry sand, bread cramps,  termites, naphthalene,  wax/plasticine,  aluminium, soil | KLB BK 4 Pg 74-75  Longhorn BK 4  Pg 70-71 |  |
|  | 5 | Tropic responses  - Phototropism | **By the end of the lesson, the learner**  **should be able to:-**  - Define tropism  - Describe phototropism and its  survival values  - Explain etiolation | Discussion  Notes taking  Viewing tropisms in  nature-fields  potted plants | Diagrams or photos of  plants responding  Real plants showing  phototropism and  etiolation | KLB BK 4 Pg 76  Longhorn BK 4  Pg 66-67 |  |
| 10 | 1&2 | Haptotropism  Geotropism | **By the end of the lesson, the learner**  **should be able to:-**  - Define haptotropism and geotropism  - Explain their survival values  - Predict possible results from a  question on klinostat | Setting up experiment on  geotropism  Group discussion | Clinostat  Seedling  Beaker  2 clay pots | KLB BK 4 Pg 77  Longhorn BK 4  Pg 69-70 |  |
|  | 3 | Other tropic responses  - Hydrotropism  - Rheotropism  - Chemotropism | **By the end of the lesson, the learner**  **should be able to:-**  - Define the responses  - Explain survival values  - Give examples practically in life of  where they are shown | Notes taking  Discussion | Photos of plants  responding  Diagrams of  germinating pollen  tube | KLB BK 4 Pg 76  Longhorn BK 4  Pg 69 |  |
|  | 4&5 | Nastic responses | **By the end of the lesson, the learner**  **should be able to:-**  - Define nastism  - Describe types of nastic responses  and their survival values | Discussion  Observation  Notes taking | Photos of plants with  nastism  Mimosa plant | KLB BK 4 Pg 78-79 |  |
| 11 | 1&2 | Production of plant  hormones and their  effect on tropism  - Auxins and  Phototropism | **By the end of the lesson, the learner**  **should be able to:-**  - State the source of auxins  - Explain how light affects movement  of auxins and effect phototropism | Group discussion  Notes taking  Observing  Drawing | Diagram of tip of  plants  Teacher’s notes | KLB BK 4 Pg 80-81  Longhorn BK 4  Pg 74 |  |
|  | 3 | Auxins & Geotropism  Auxins & haptotropism | **By the end of the lesson, the learner**  **should be able to:-**  - Explain effects of gravity on  movement of auxins and touch  - Explain how auxins distribution  Effect geotropism and haptotropism | Group discussion  Notes taking  Observing  Drawing | Diagram of plants  Teacher’s notes  Photos | KLB BK 4 Pg 82-83  Longhorn BK 4  Pg 75 |  |
|  | 4&5 | Apical dominance | **By the end of the lesson, the learner**  **should be able to:-**  - Explain the role of the terminal bud  in apical dominance  - State application of apical dominance  In agriculture e.g. pruning of tea/coffee | Group discussion  Notes taking  Observing | Photos and diagrams  Plants in a garden  Notes | KLB BK 4 Pg 147  POB VOL 2 Pg 302 |  |
| 12 | 1&2 | Practical on response  Tactic, tropic response | **By the end of the lesson, the learner**  **should be able to:-**  State observations and explain  practicals on exiolation, klinostat,  geotropism, taxis | Discussion  Writing questions and  answering | Maize seeds  Plastic containers  Carton boxes | KLB BK 4 Pg 82 |  |
|  | 3&4 | Reception and  Response in animals  - The nervous system | **By the end of the lesson, the learner**  **should be able to:-**  - Define reception and effects  - Explain components of the nervous  system | Discussion  Notes taking | Flow diagrams of CNS  and motor organs | KLB BK 4 Pg 83-84  Longhorn BK 4  Pg 76 |  |
|  | 5 | Structure of a nerve  and neurone | **By the end of the lesson, the learner**  **should be able to:-**  Draw and label the nerve cell | Drawing  Discussion | Diagram of the nerve  cell | KLB BK 4 Pg 84  Longhorn BK 4  Pg 77 |  |
| 13 | 1&2 | Adaptations of the  Nerve Cell  Functions of the  Neurones | **By the end of the lesson, the learner**  **should be able to:-**  - State functions of neurones  - Describe adaptations of the neurones  to their functions | Discussion  Notes taking | Table in roles of parts  of the neurone | KLB BK 4 Pg 85  Longhorn BK 4  Pg 78 |  |
|  | 3&4 | Types of neurones | **By the end of the lesson, the learner**  **should be able to:-**  - Draw the sensory, motor and relay  neurones  - State the role of each of the neurones | Drawing  Discussion  Notes taking | Diagrams of different  types of neurones | KLB BK 4 Pg 85-86  Longhorn BK 4  Pg 76-79 |  |
|  | 5 | Revision questions on  Neurones | **By the end of the lesson, the learner**  **should be able to:-**  Answer correctly the questions given | Writing a test  Discussion | Sample questions | KCSE past papers |  |
| 14/15 |  |  |  |  |  |  |  |

**BIOLOGY SCHEMES OF WORK**

**FORM FOUR 2016**

**TERM II**

**REFERENCES:**

1. KLB Secondary Biology Form 4 Students Book KLB BK 4
2. Longman Biology Book 4
3. Longhorn Biology Book 4
4. Principles of Biology Vol 2 (POB VOL 2)

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| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 |  | **SCHOOL OPENING AND PRACTICALS EXAMS** | | | | |  |
| 2 | 1&2 | Response and  Coordination in  Animals  - The Brain | **By the end of the lesson, the learner**  **should be able to:-**  - Draw a well labeled diagram of the  Brain  - Explain functions of the brain | Group discussion  Notes taking  Observation  Drawing | Chart with brain parts | KLB BK 4 Pg 86-88  Longhorn BK 4  Pg 80-82 |  |
|  | 3 | The spinal chord | **By the end of the lesson, the learner**  **should be able to:-**  - Draw a T.S of the spinal chord  - Explain parts and functions of the  Spinal chord | Discussion  Notes taking  Drawing | Diagram showing TS  of human spinal chord | KLB BK 4 Pg 88-89  Longhorn BK 4  Pg 82 |  |
|  | 4 | Simple Reflex Action | **By the end of the lesson, the learner**  **should be able to:-**  - Define reflex action  - Explain simple reflex action | Discussion  Q/A  Notes taking | Diagram illustrating  reflex action | KLB BK 4 Pg 89-90  Longhorn BK 4  Pg 82-84 |  |
|  | 5 | Conditioned reflex  action | **By the end of the lesson, the learner**  **should be able to:-**  - Define conditioned reflex action  - Describe conditioned reflex  - Differentiate between conditioned | Question and answers  Notes taking  Discussion | Sample quiz  Pairs of learners to  illustrate knee jerk  reflex | KLB BK 4 Pg 90-91  Longhorn BK 4  Pg 84-90 |  |
| 3 | 1&2 | Transmission of nerve  Impulses | **By the end of the lesson, the learner**  **should be able to:-**  - Define action and resting potential  - Define synapse  - Describe impulse transmission | Description  Note taking  Drawing | Diagram of a neuro-  junction and action +  resting potential | KLB BK 4 Pg 91-92 |  |
|  | 3 | Role of hormones in  Coordination | **By the end of the lesson, the learner**  **should be able to:-**  - State role of adrenaline and effects of  over and under secretion  - Compare endocrine and nervous  system | Description  Note taking  Discussion | Diagram of –ve and  +ve feedback  mechanisms | KLB BK 4 Pg 95  Longhorn BK 4  Pg 87-88 |  |
|  | 4&5 | Role of hormones in  Coordination  Drug abuse | **By the end of the lesson, the learner**  **should be able to:-**  - State the role of thyroxin and effects  of over and under secretion.  - Define drug abuse  - State effects of drug abuse  - Name commonly abused drugs | Discussion  Notes taking  Q/A | Charts of –ve feedback  Process for thyroxide  Photos of effects of  Drug abuse | KLB BK 4 Pg 94-96  Longhorn BK 4  Pg 85-89 |  |
| 4 | 1&2 | Sense organs  The eye | **By the end of the lesson, the learner**  **should be able to:-**  - Identify the sense organs in humans  - Draw and label parts of the eye  (human) or (mammalian)  - State functions of parts of the eye | Discussion  Drawing  Notes taking | Charts and models of  Mammalian eye | KLB BK 4 Pg 97-98  Longhorn BK 4  Pg 91-92 |  |
|  | 5 | Hearing process | **By the end of the lesson, the learner**  **should be able to:-**  Describe the hearing process and role  of ear in body balance | Notes taking  Discussion | Chart of mammalian  Ear or diagram | KLB BK 4  Pg 108-110  Longhorn BK 4  Pg 107-108 |  |
| 6 | 1&2 | Ear defects | **By the end of the lesson, the learner**  **should be able to:-**  - State defects of the ear  - Explain causes and their correction | Notes taking  Discussing | Chalk and board  Diagram of the ear | KLB BK 4 Pg 107  Longhorn BK 4  Pg 108-110 |  |
|  | 3 | Support and movement  Introduction | **By the end of the lesson, the learner**  **should be able to:-**  - Define support  - Explain importance of support and  Movement in plants | Notes taking  Discussion  Q/A | Diagrams of support  tissues and their  location | KLB BK 4 Pg 111  Longhorn BK 4  Pg 115 |  |
|  | 4&5 | Mechanical tissues in  Plants | **By the end of the lesson, the learner**  **should be able to:-**  - Name support tissues in plants  - Explain factors and adaptations of  These support tissues to their functions | Notes taking  Drawing  Observation | Diagram of support  Tissues and their  Location | KLB BK 4  Pg 112-115  Longhorn BK 4  Pg 116-118 |  |
| 7 | 1&2 | Support in  Monocotyledonous  and dicotyledonous  plant | **By the end of the lesson, the learner**  **should be able to:-**  Draw TS of monocot and dicot stems  to show support tissues | Practical observation of  stem TS  Note taking  Drawing | Microscope  Razor  Young monocot and  dicot stems, stains | KLB BK 4 Pg 112 |  |
|  | 3 | Support and movement  in animals  Types of skeleton | **By the end of the lesson, the learner**  **should be able to:-**  - Outline importance of movement in  animals  - State types of skeletons and examples | Explanation  Notes taking  Observing | Pictures of animals in  Different skeletons | KLB BK 4  Pg 116-117  Longhorn BK 4  Pg 119-120 |  |
|  | 4&5 | Locomotion in Fish | **By the end of the lesson, the learner**  **should be able to:-**  - Describe locomotion in finned fish  and adaptations  - Draw a well labeled diagram of a fish  - Calculate tail power | Drawing  Discussion  Observation  Description and  Explanation | Freshly killed fish  Live fish swimming in  water  Diagram of fish | KLB BK 4  Pg 118-119  Longhorn BK 4  Pg 123-125 |  |
| 8 | 1&2 | The human skeleton  - Axial skeleton | **By the end of the lesson, the learner**  **should be able to:-**  - Describe parts of human skeleton  - Describe roles of skull, ribcage and  sternum | Observing  Note taking  Drawing | Chart of human  skeleton  Specimen of skull with  satures | KLB BK 4  Pg 119-120  Longhorn BK 4  Pg 126-127 |  |
|  | 3&4 | The vertebral column  - Types of vertebra | **By the end of the lesson, the learner**  **should be able to:-**  - Name types of vertebra  - Describe cervical vertebra | Observation of bones  Drawing  Notes taking | Photos & specimen of  Cervical vertebra, atlas  and axis | KLB BK 4  Pg 121-122  Longhorn BK 4  Pg 128 |  |
|  | 5 | Thoracic and lumbar  vertebra | **By the end of the lesson, the learner**  **should be able to:-**  Explain structure and adaptations,  functions of thoracic and lumbar  vertebra | Discussion  Drawing  Observation | Bones of lumbar &  Thoracic regions | KLB BK 4  Pg 122-123  Longhorn BK 4  Pg 133-135 |  |
| 9 | 1&2 | Caudal and sacral  vertebra  Appendicular skeleton | **By the end of the lesson, the learner**  **should be able to:-**  - Describe bones of sacrum and caudal  regions  - Name bones of appendicular skeleton | *© Education Plus Agencies*  Description  Notes taking  Explanation  Observation | Bones of caudal and  sacral region  Chart of human  skeleton | KLB BK 4  Pg 124-125  Longhorn BK 4  Pg 141-142 |  |
|  | 3&4 | The forelimb bones | **By the end of the lesson, the learner**  **should be able to:-**  - Name the bones of the forelimb  - State functions of parts of each bone  and adaptations | Drawing  Observation  Description  Discussion | Bones of forelimb | KLB BK 4 Pg 125  Longhorn BK 4  Pg 143-147 |  |
|  | 5 | Bones of hind limbs | **By the end of the lesson, the learner**  **should be able to:-**  - Name bones of hind limb  - Describe parts of the bones and  Adaptations | Discussion  Observation  Notes taking | Bones of hind limb | KLB BK 4  Pg 126  Longhorn BK 4  Pg 148-155 |  |
| 10 | 1&2 | Practical on bones | **By the end of the lesson, the learner**  **should be able to:-**  Carryout practical activity to correctly  identify various types of bones in the  test | Drawing  Observation  Identification  Discussion | Bones of vertebral  column and  appendicular skeleton | KLB BK 4  Pg 122-123  Longhorn BK 4  Pg 132-135 |  |
|  | 3&4 | Joints | **By the end of the lesson, the learner**  **should be able to:-**  - Define joint  - Name types of joints  - Describe the nature of each joint with  examples | Drawing  Observation  Demonstration  Discussion | Diagrams of joints  Student to demonstrate  movable and  immovable joints | KLB BK 4  Pg 127-128  Longhorn BK 4  Pg 152-153 |  |
|  | 5 | Practice questions on  Joints | **By the end of the lesson, the learner**  **should be able to:-**  Answer questions correctly | Answering questions  Discussion | Sample quiz | POB VOL 2  Pg 329-330  Past papers |  |
| 11 | 1&2 | Muscles | **By the end of the lesson, the learner**  **should be able to:-**  - Define muscle  - Name types of muscles and state their  characteristics and differences | Discussion  Drawing  Notes taking | Diagrams of muscles | KLB BK 4  Pg 129-131  Longhorn BK 4  Pg 155 |  |
|  | 3&4 | Revision on joints and  Muscles | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion | Sample questions | KLB BK 4  Pg 131-132  POB VOL 2  Pg 321 |  |
|  | 5 | Revision on  classification | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Teacher supervision | Sample questions  KCSE past papers | POB VOL 2  Pg 43-44 |  |
| 12 | 1&2 | Dichotomous keys | **By the end of the lesson, the learner**  **should be able to:-**  - Construct dichotomous keys  - Use given keys to identify organisms | Group discussion  Supervision | Sample questions  Diagrams or photos of  organisms | POB VOL 2  Pg 45-47 |  |
|  | 3&4 | Ecology | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Supervision | Sample KCSE  Questions | KCSE revision  papers |  |
|  | 5 | Factors in the  Environment | **By the end of the lesson, the learner**  **should be able to:-**  Write an essay on abiotic and biotic  factors and effects on distribution of organisms | Group discussion  Supervision | Sample questions | KCSE and Mocks  revision papers |  |
| 13 &  14 |  | **JULY SERIES EXAMS BEGIN** | | | | |  |

**BIOLOGY SCHEMES OF WORK**

**FORM FOUR 2016**

**TERM III**

**REFERENCES:**

1. KLB Secondary Biology Form 4 Students Book KLB BK 4
2. Longman Biology Book 4
3. Longhorn Biology Book 4
4. Principles of Biology Vol 2 (POB VOL 2)

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| **WK** | **LSN** | **TOPIC/S-TOPIC** | **OBJECTIVES** | **L/ACTIVITIES** | **L/T AIDS** | **REFERENCE** | **REMARKS** |
| 1 |  | **SCHOOL OPENING AND SEPTEMBER SERIES EXAMS BEGIN** | | | | |  |
| 2 | 1&2 | Revision on the kidney  And homeostasis | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Supervision | Sample questions  KCSE past papers | KCSE and Mocks  revision papers |  |
|  | 3&4 | The liver and  Homeostasis | **By the end of the lesson, the learner**  **should be able to:-**  Answer the discussion questions  correctly | Group discussion  Supervision | Sample questions | KCSE and Mocks  revision papers |  |
|  | 5 | The skin and  Homeostasis | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Supervision | Sample questions | KCSE and Mocks  revision papers |  |
| 3 | 1&2 | Transport in plants  - Phloem and xylem | **By the end of the lesson, the learner**  **should be able to:-**  - Answer all given questions correctly  - Observe and draw cross-sections to  show order of vascular bundles | Group discussion  Supervision | Sample questions | KCSE and Mocks  revision papers |  |
|  | 3&4 | Cross sections of roots  and stems  Transpiration | **By the end of the lesson, the learner**  **should be able to:-**  - Answer all questions correctly  - Observe and draw cross section under  a microscope | Group discussion  Supervision | Sample questions | KCSE Past Papers |  |
|  | 5 | Forces that help in  water movement up  the stem | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Supervision | Sample questions | KCSE Past Papers |  |
| 4 | 1&2 | Respiration | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Supervision | Sample questions | KCSE Past Papers |  |
|  | 3&4 | Gaseous exchange in  Plants | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Supervision | Sample questions | KCSE Past Papers |  |
|  | 5 | Gaseous exchange in  Animals | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Teacher Supervision | Sample questions from  Past papers | KCSE Past Papers |  |
| 5 | 1&2 | Transport in plants | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion | Sample questions from  Past papers | KCSE Revision  Papers |  |
|  | 3&4 | Nutrition in animals | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion | Sample questions from  Past papers | Past KCSE and  Mock Papers |  |
|  | 5 | The digestive system | Answer all questions correctly | Group discussion | Pyramid revision  exams | KCSE Revision  Papers |  |
| 6 | 1&2 | Food tests | **By the end of the lesson, the learner**  **should be able to:-**  Carry out the practical on food tests  and write correct answers | Practical experiments in  Groups | Practical quiz  Reagents  Food mix | Teachers Practical  Questions |  |
|  | 3&4 | The cell | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion | Sample questions | KCSE Revision  Papers |  |
|  | 5 | Cell physiology | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion  Supervision | Sample questions | Pyramid Revision  Series |  |
| 7 | 1&2 | Cell physiology  practical | **By the end of the lesson, the learner**  **should be able to:-**  Carry out the practical and write  correct answers | Group discussion  Observation  Supervision | Exam papers  Potato  Strips  Ruler and solutions | KCSE Revision  Series |  |
|  | 3&4 | Reproduction in plants | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Group discussion | Sample questions | KCSE Revision  Series |  |
|  | 5 | Reproduction in  animals | **By the end of the lesson, the learner**  **should be able to:-**  Answer all questions correctly | Supervised group  discussion | Sample questions | KCSE Revision  Series |  |
| 8 |  | **KCSE PREPARATION BEGIN**  **KCSE STARTS** | | | | |  |