

# WASSCE / WAEC BIOLOGY MAY / JUNE 2015 PAPER 2 (THEORY)

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S5042 & 1 JUNE  
WASSCE 2015  
BIOLOGY 2 & 1  
Essay & Objective  
2½ hours

# 2 & 1

Name: .....

Index Number: .....

## THE WEST AFRICAN EXAMINATIONS COUNCIL West African Senior School Certificate Examination

June 2015

BIOLOGY 2 & 1

2½ hours

*Do not open this booklet until you are told to do so. While you are waiting, read the following instructions carefully.*

*Write your name and index number in the spaces provided at the top right-hand corner of this booklet.*

*This booklet consists of two papers. Answer Paper 2 which comes first, in your answer booklet and Paper 1 in your Objective Test answer sheet. Paper 2 will last for 1 hour 40 minutes after which the answer booklet will be collected. Do not start Paper 1 until you are told to do so. Paper 1 will last for 50 minutes.*

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PAPER 2

ESSAY

1 hour 40 minutes

[ 70 marks ]

Answer **three** questions in all: **two** questions from Section A and **one** compulsory question in either Section B or Section C. No marks will be awarded for answering questions **not** peculiar to your own country.

Write your answers in **ink** in your answer booklet.

Large labelled diagrams should be used where they make an answer clearer. The names given for chosen species must be English or Scientific and **not** vernacular.

Credit will be given for clarity of expression and orderly presentation of answers.

## SECTION A

FOR ALL CANDIDATES.

Answer **two** questions **only** from this Section.

1. (a) Explain **briefly** sexual reproduction in *Rhizopus*. [ 8 marks ]  
  
(b) A student suddenly stepped on a big snake, he cried for help and ran away.
  - (i) Name the hormone produced in the body for the reaction.
  - (ii) In which part of the human body is the hormone named in 1 (a) (i) produced?
  - (iii) State **five** changes that must have taken place as a result of the hormone named in 1 (a) (i). [ 7 marks ]
- (c) (i) In a tabular form, state **three** differences between *excretion in flowering plants* and *excretion in humans*.  
  
(ii) List **two** organelles found in a plant cell that are responsible for the excretion of metabolic wastes. [ 5 marks ]
2. (a) Explain how the leaf of a flowering plant is adapted for photosynthesis. [ 6 marks ]  
  
(b) Describe **briefly** the mode of feeding in tapeworms. [ 5 marks ]  
  
(c) Name **one** mineral element **each** needed for the proper functioning of:
  - (i) bones;
  - (ii) red blood cells;
  - (iii) thyroid gland. [ 3 marks ]
- (d) (i) State **three** benefits of including roughage in the diet of humans. [ 3 marks ]  
(ii) State **three** reasons why proteins are important to humans. [ 3 marks ]



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3. (a) (i) What is *sewage*? [ 2 marks ]  
(ii) State **five** effects of releasing untreated sewage into a stagnant water body. [ 5 marks ]  
(b) Explain *surface terracing* as a soil conservation method. [ 3 marks ]  
(c) Explain the term *adaptation*. [ 2 marks ]  
(d) Explain **two** ways **each** by which the following organisms adapt to their habitats:  
(i) hydrophytes;  
(ii) xerophytes. [ 8 marks ]
4. (a) Explain the following terms:  
(i) *test cross*;  
(ii) *monohybrid cross*. [ 4 marks ]  
(b) In a mango plant, the allele for bean - shaped seed is **r** and is recessive to round - shaped seed **R**. With the aid of a genetic diagram, determine the genotypes of the offspring if:  
(i) a homozygous bean - shaped parent is crossed with a homozygous round shaped parent;  
(ii) a heterozygous bean - shaped parent is crossed with a heterozygous round shaped parent. [ 16 marks ]

## SECTION B

FOR CANDIDATES IN GHANA ONLY.

Answer **all** the questions in this section.

5. (a) (i) What is *magnification*? [ 2 marks ]  
(ii) A student is provided with a specimen of *Tilapia* of length 10 *cm*. The student made a drawing of the specimen of length 12 *cm*. Calculate the magnification of the drawing. [ 3 marks ]  
(b) State **three** main characteristic features **each** of the members of the following phyla:  
(i) *Arthropoda*;  
(ii) *Nematoda*. [ 6 marks ]  
(c) (i) What is *cellular respiration*? [ 2 marks ]  
(ii) State **four** ways by which *ATP* molecules are important in a living cell. [ 4 marks ]

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(d) (i) State **two** differences between *DNA* and *RNA*. [ 2 marks ]

(ii) The illustration below is the *DNA* sequence from the beginning of a gene coding for an enzyme involved in photosynthesis. The upper line of bases represents the template strand. *Study the illustration carefully and answer the question that follows:*

*TACTTTAAGAG*  
*ATGAAATTCTC*

Write the *mRNA* sequence that would be transcribed from the *DNA* sequence. [ 2 marks ]

(e) State **four** functions of the stem of a flowering plant. [ 4 marks ]

(f) List the stages involved in the treatment of water for public consumption. [ 5 marks ]

## SECTION C

FOR CANDIDATES IN NIGERIA, SIERRA LEONE, THE GAMBIA AND LIBERIA.

*Answer all the questions in this section.*

6. (a) Copy and complete the table below.

<i>Diseases</i>	<i>one effect</i>	<i>one remedy</i>
<i>Kidney stones</i>		
<i>Nephritis</i>		
<i>Diuresis</i>		

[ 6 marks ]

(b) Make a labelled diagram of the carbon cycle. [ 5 marks ]

(c) (i) What is an *Estuarine habitat*? [ 2 marks ]

(ii) Construct a food chain typical of an Estuarine habitat. [ 2 marks ]

(d) (i) Name **two** pests and **two** diseases that can attack plant crops. [ 4 marks ]

(ii) State **three** ways of controlling plant diseases. [ 3 marks ]

(e) State **four** functions of a public health authority. [ 4 marks ]

(f) State **four** ways of maintaining food hygiene in the community. [ 4 marks ]