

NAME..... INDEX NO:.....

CANDIDATE'S SIGNATURE .....

DATE: .....

213/1

BIOLOGY

PAPER 1

(THEORY)

JULY/AUGUST-2015

TIME: 2 HOURS

# KAKAMEGA CENTRAL SUB-COUNTY JOINT EVALUATION EXAM-2015

*Kenya Certificate of Secondary Education (K.C.S.E.)*

213/1

BIOLOGY

PAPER 1

(THEORY)

JULY/AUGUST-2015

TIME: 2 HOURS

## INSTRUCTIONS TO CANDIDATES

1. Write your **name** and **index number** in the spaces provided above
2. **Sign** and write the **date** of examination in the spaces provided.
3. Answer **all** the questions in the spaces provided.

**FOR EXAMINERS USE ONLY**

Question	Maximum score	Candidate's score
1- 29	80	

*This paper consists of 7 printed pages.*

*Candidates should check the question paper to ascertain all the pages are printed as indicated*

*And no questions are missing.*

1. Distinguish between Diffusion and Osmosis. (2mks)

.....  
.....

2. Describe what happens during the light stage of photosynthesis. (3mks)

.....  
.....  
.....

3. State **two** ways in which the root hairs are adapted to their functions. (2rnks)

.....  
.....

4. a) What is meant by the following terms:

- i) Homeostasis. (1mk)

.....  
.....

ii) Osmoregulation. (1mk)

.....  
.....

b) Name the hormones involved in regulating glucose level in blood. (2mks)

.....  
.....

5. a) What is meant by the term allele? (1mk)

.....  
.....

b) Explain how the following occurs during gene mutation. (2mks)

i) Deletion.

.....

ii) Inversion

.....

6. a) Name the cartilage found between the bones of the vertebral column. (1mk)

.....  
.....

b) State the function of the cartilage named in (a) above. (1mk)

.....  
.....

7. Give an example of a sex — linked trait in humans on:

Y- Chromosome

(1mk)

.....  
.....

X- Chromosome. (1mk)

.....  
.....

8. State **three** benefits of polyploidy in plants to a farmer. (3mks)

.....  
.....

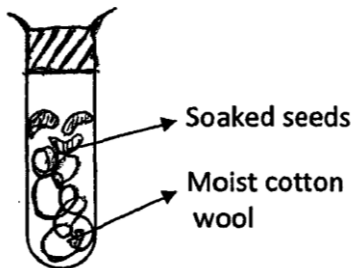
9. Other than having many features in common, state the other characteristics of a species. (1mk)

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.....

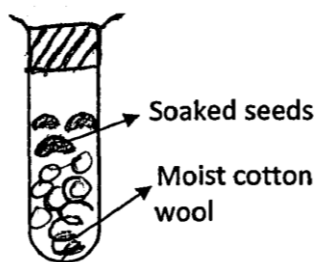
10. Why are green plants referred to as primary producers in an ecosystem? (2mks)

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.....

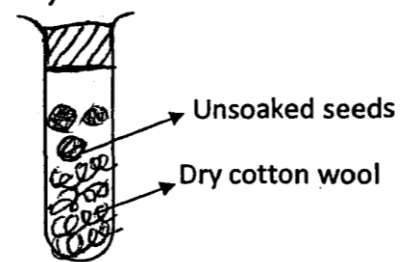
11. The diagrams below represent a set up to investigate the conditions necessary for seed germination.



At room temperature



At 0°C



At room temperature

The set up was left for 7 days.

a) What conditions were being investigated in the experiment? (2mks)

.....  
.....

b) State **two** reasons for soaking seeds in set ups A and B. (2mks)

.....  
.....

12. Name the substances in plasma and red blood cells that transport carbon (IV) oxide. (2mks)

Plasma

.....  
.....

Red blood cells

.....  
.....

13. State **two** factors that cause increase in the rate of transpiration from leaves. (3mks)

.....  
.....  
.....

14. What is the significance of meiosis? (2mks)

.....  
.....

15. a) State **three** advantages of cross — pollination. (3mks)

.....  
.....  
.....

b) State **two** ways by which plants avoid self— pollination. (2mks)

.....  
.....  
.....

16. The following organisms were found in a certain habitat:

Water snail, Protozoa, Kingfisher, Mosquito larvae, Phytoplankton, Fish and Water weeds.

In the table below place the organisms in their respective trophic levels. (3mks)

**TROPHIC LEVEL**

**ORGANISMS**

Producers

Primary producers

Secondary producers

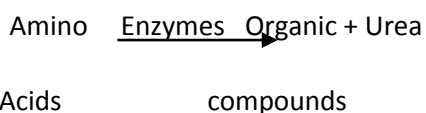
17. Name the process by which mineral salts are absorbed by plants. (1mk)

.....  
.....

18. Write down a word equation that represents the process of aerobic respiration. (1mk)

.....  
.....

19. The equation below represents a metabolic process that occurs in the mammalian liver.



a) Name the process. (1mk)

.....  
.....

b) What is the importance of the process to the mammal? (2mks)

.....  
.....

20. Name the carbohydrate stored in:

i) Mammalian liver.. (1mk)

.....  
.....

ii) Potato (1mk)

21. State the functions of each of the following structures in a mammalian tooth:

a) Pulp cavity (1mk)

.....  
.....

b) Enamel (1mk)

.....  
.....

c) Dentine (1mk)

.....  
.....

22. a) State **two** environmental conditions that can cause seed dormancy. (2mks)

.....  
.....

b) Distinguish between epigeal and hypogeal type of germination. (2mks)

.....  
.....

23. a) Name the fluid that is produced by the sebaceous glands. (1mk)

.....  
.....

b) What is the role of sweat on the human skin? (2mks)

.....  
.....

24. Distinguish between the terms:

a) Homodont and heterodont.

.....

.....

b) Haemolysis and plasmolysis (2mks)

.....

.....

25. State **three** disadvantages of sexual reproduction (3mks)

.....

.....

.....

26. a) Name **one** defect of the circulatory system in humans. (1mk)

.....

.....

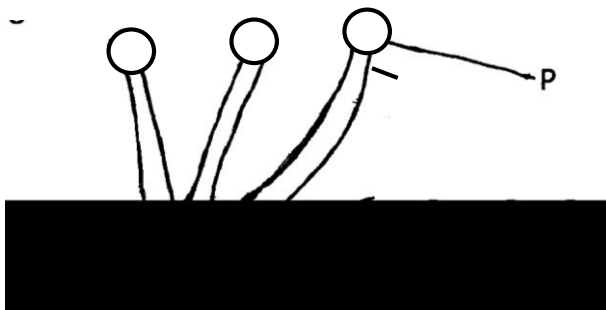
b) State **three** functions of blood other than transport. (3mks)

.....

.....

.....

27. The diagram below illustrates the structure of bread mould



Name the part labeled P



.....  
b) State the functions of the structure labeled Q

(3mks)

.....  
.....  
.....

28. a) Explain the role of continental drift in evolution.

(3mks)

.....  
.....  
.....

b) What is meant by the term organic evolution?

(1mk)

.....  
.....

29. What role does mucus play in the stomach?

(2mks)

.....  
.....

NAME..... INDEX NO:.....

CANDIDATE'S SIGNATURE .....

DATE: .....

213/2  
BIOLOGY  
PAPER 2  
(THEORY)  
JULY/AUGUST-2015  
TIME: 2 HOURS

**KAKAMEGA CENTRAL SUB-COUNTY JOINT EVALUATION EXAM-2015**  
*Kenya Certificate of Secondary Education (K.C.S.E.)*

213/2  
BIOLOGY  
PAPER 2  
(THEORY)  
JULY/AUGUST-2015  
TIME: 2 HOURS

**INSTRUCTIONS TO CANDIDATES**

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- Answer **all** the questions in the spaces provided.

**FOR EXAMINERS USE ONLY**

Question	Maximum score	Candidate's score
1- 30	80	

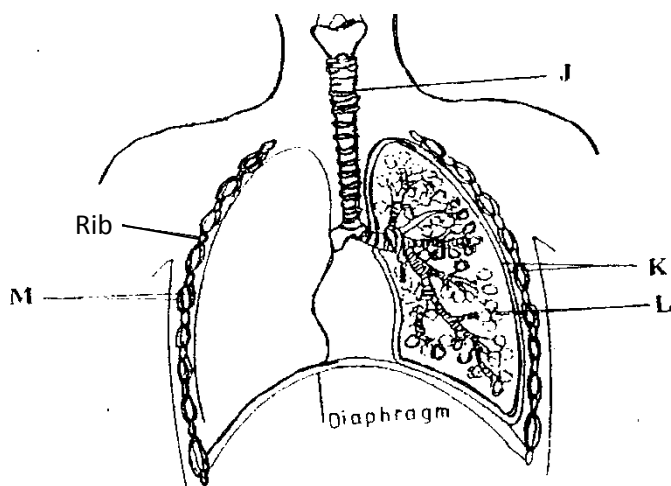
*This paper consists of printed pages.*

*Candidates should check the question paper to ascertain all the pages are printed as indicated  
And no questions are missing.*

**SECTION A (40 MARKS)**

*Answer all questions in this section in the spaces provided*

1. The diagram below represents gaseous exchange structures in humans



a) Name the structures labeled **K,L** and **M** (3mks)

**K**.....

**L**.....

**M**.....

b) How the structure labelled **J** suited to its function? (3mks)

.....  
 .....

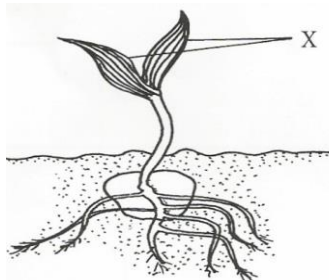
c) Name the process by which inhaled air moves from the structure labeled **L** into blood capillaries (1 mk)

.....

d) Give the scientific name of the organism that causes tuberculosis in humans. (1mk)

.....

2(a) The diagram below represents a stage during the process of germination



i) Name the type of germination illustrated in the diagram (1mk)

.....

Give a reason for your answer in (a) (i) above (1mk)

.....

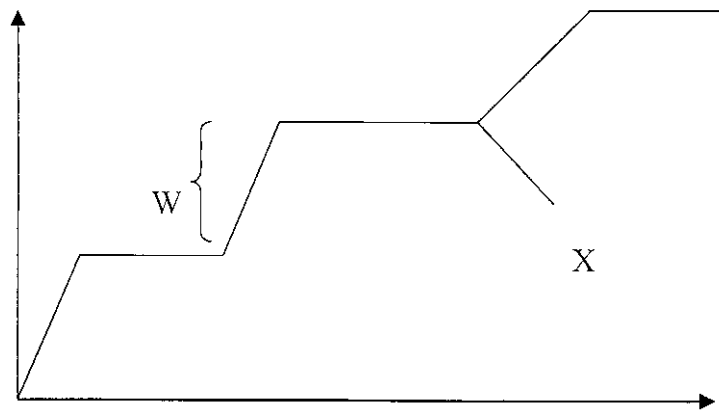
ii) Give **two** functions of the part labeled X (2mks)

.....  
.....

iii) State the other type of germination other than the one named in a(i) above (1mk)

.....

b. The graph below represents the growth of animals in a certain phylum.



i) Name the type of growth pattern shown on the graph (1mk)

.....

ii) Identify the process represented by x. (1mk)

.....

iii) Name the hormone responsible for the process in (b) above (1mk)

.....

3. A red cow was mated with a white bull. All the F1 were neither red nor white. Such individuals are said to be roan

a) Using letter R to represent the gene for red colour and W to represent the gene for the white colour, work out the genotypes of the F2 offspring when F1 were mated. (4mks)

b) Write down the genotypic and phenotypic ratios of F2 generation (2mks)

.....  
.....

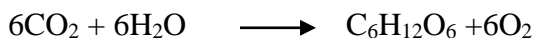
c) Suggest a reason why the F1 were all roan (1mk)

.....

d) State the importance of a test cross? (1mk)

.....

4. The equation below represents a process that takes place in plants



a) Name the process (1mk)

.....

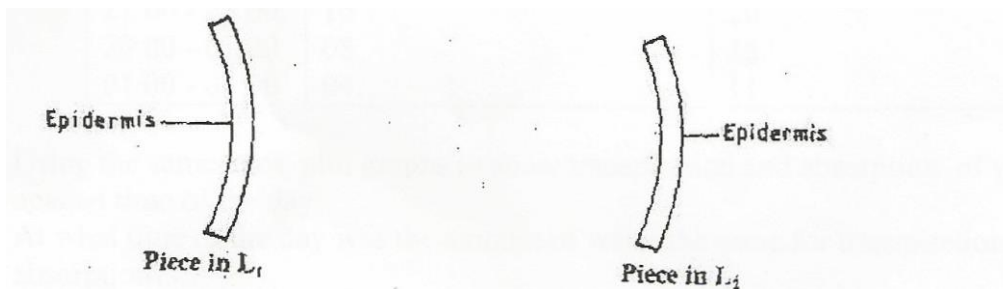
b) State **two** conditions necessary for the process to take place (2mks)

.....  
.....

c) State what happens to end – products of the process (5mks)

.....  
.....  
.....  
.....

5. A freshly obtained dandelion stem measuring 5cm long was split lengthwise to obtain two similar pieces. The pieces were placed in solution of different concentrations in petri dishes for 20 minutes. The appearance after 20 minutes is as shown



a) Account for the appearance of the pieces in solutions L<sub>1</sub> and L<sub>2</sub> (6mks)

.....  
.....

- b) State the significance of the biological process involved in the experiment (2mks)

.....  
 .....

**SECTION B (40 MARKS)**

*Answer question 6 (compulsory) and either questions 7 or 8 in the spaces provided after question 8*

6. An experiment was carried out to investigate transpiration and absorption of water in sunflower plants in their natural environment with adequate supply of water. The amount of water was determined in two hours intervals. The results are as shown in the table below.

Time of day	Amounts of water in grams	
	Transpiration	Absorption
11 00 – 13 00	33	20
13 00 – 15 00	45	30
15 00 – 17 00	52	42
17 00 – 19 00	46	46
19 00 – 21 00	25	32
21 00 – 23 00	16	20
23 00 – 01 00	08	15
01 00 – 03 00	04	11

- a) Using the same axes, plot graphs to show transpiration and absorption of water in grams against time of the day (7mks)







A series of horizontal dotted lines for writing.

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NAME..... INDEX NO:.....

CANDIDATE'S SIGNATURE .....

DATE: .....

231/3  
BIOLOGY  
PAPER 3(PRACTICAL)  
JULY/AUGUST-2015  
TIME: 1<sup>3</sup>/<sub>4</sub> HOURS

**KHWISERO SUB-COUNTY JOINT EVALUATION EXAM - 2015**  
*Kenya Certificate of Secondary Education (K.C.S.E.)*

231/3  
BIOLOGY  
PAPER 3(PRACTICAL)  
JULY/AUGUST-2015  
TIME: 1<sup>3</sup>/<sub>4</sub> HOURS

**INSTRUCTIONS TO CANDIDATES**

- Write your **name**, **Index number** and name of your school in the spaces provided above
- **Sign** and write the **date** of examination in the spaces provided.
- This paper consists of three questions
- Answer **all** the questions in the spaces provided.

**FOR EXAMINERS USE ONLY**

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1	12	
2	18	
3	10	
<b>TOTAL SCORE</b>	<b>40</b>	

*This paper consists of 4 printed pages.*

*Candidates should check to ascertain that all pages are printed as indicated*

*and that no questions are missing.*

1. You are provided with 8cm<sup>3</sup> solution Q, Iodine solution, Benedict's solution, 10% sodium hydroxide solution, 1% copper sulphate solution means of heating test tube rack, 3 dry test tube and a water bath.

Use the provided reagents and apparatus to establish food substances present in solution Q. Fill the observation and conclusion in the table provided.

Food substance	Procedure	Observation	Conclusion

(9 mks)

- (b) How would you test for the presence of Vitamins in solution Q

(1mk)

.....  
 .....

- (c) State **two** food substance in Q and enzymes in human beings that would digest them (2mks)

Food substance	Enzyme from pancreas

2. You are provided with specimen labeled R. observe it keenly and answer the questions that follow.

(a) Suggest the class of the plant from which the specimen was obtained. (1mk)

.....  
.....

(b) Give **two** reasons for your answer (2mks)

.....  
.....

(c) Observe the leaf on, the twig of the specimen R. Describe the leaf. (3mks)

.....  
.....

(d) Pluck out the open flower from the twig . cut the flower longitudinally using a sharp scarpel or razor blade exposing the inner parts.

(i) Suggest the agent of pollination of the above flower. (1mk)

.....  
.....

(ii) Give **three** reasons your answer in d(i) above (3mks)

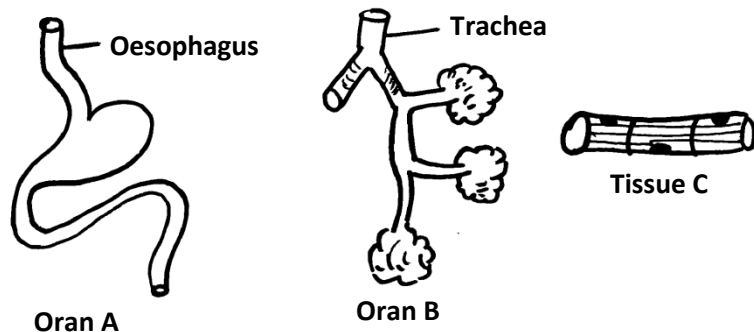
.....  
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(f) Obtain transverse section of specimen S using the scarpel and observe the cut surface. Using a handlens, observe and draw one of the cut surface labeling all the part seen. (4mks)

.....  
.....  
.....  
.....

(l) Calculate the magnification of the drawing. (1mk)

3 Observe the diagram of various organs obtained from human beings .



(i) Identify the system represented by the organs A and B. (2mks)

A:.....

B:.....

(ii) State the muscles that line inner walls of system A and muscles that make up tissue C (2mks)

A:.....

C:.....

(iii) Where in the body would you locate tissues represented by C. (1mk)

.....  
.....

(iv) How are the 'bag like' structures in B suited to their function. (3mks)

.....  
.....

(v) Why do tracheoles in insects, lack chitinous rings? (2mks)

.....  
.....