

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

Candidate's signature.....

Date.....

GATUNDU SUB COUNTY DISTRICT FORM FOUR 2014 EVALUTION EXAMINATION

231/1
BIOLOGY
PAPER I
(Theory)
JULY/AUGUST 2014

**GATUNDU DISTRICT SECONDARY SCHOOLS EVALUATION TEST
KENYA CERTIFICATE OF SECONDARY EDUCATION**

**BIOLOGY
PAPER 1
TIME: 2 HOURS**

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the spaces provided
- Answer all questions in the spaces provided
- Wrong spelling especially of technical terms will be penalized.

FOR EXAMINER'S USE ONLY

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1-30	80	

1. State the functions of the following cell organelles. (2 marks)

(i) Golgi apparatus

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(ii) Mitochondria

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2. State two ways in which xylem vessels are adapted to their functions. (2 marks)

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3. Distinguish between Ecology and Ecosystem. (2 marks)

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4. a) What is Natural selection. (1 mark)

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b) What is meant by the following terms? (4 marks)

(i) Homologous structure

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Example

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(ii) Analogous structure

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Example

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4. a) State two disadvantages of sexual reproduction. (2 marks)

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b) State two adaptations of the human spermatozoa. (2 marks)

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5. What adverse effects do skin lightening cosmetics have on the user? (2 marks)

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6. Name the structures in liverworts that produce. (2 marks)

a) Male gametes

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b) Female gametes

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7. State three effects of dumping untreated sewage into a river. (3 marks)

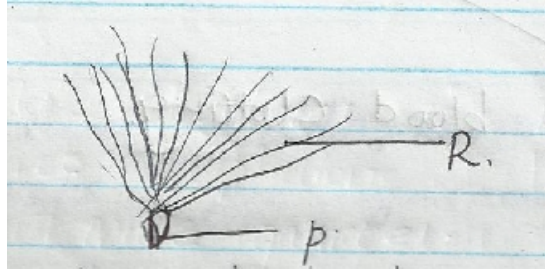
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8. a) State two factors within the seed that cause seed dormancy. (2 marks)

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b) State two characteristics of meristematic cells in plants. (2 marks)

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9. Study the diagram below and answer the questions that follow.



a) Name each of the structure labeled P and R. (2 marks)

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b) (i) Name the type of fruit represented above. (1 mark)

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(ii) Explain one observable way in which the fruit is adapted to its mode of dispersal. (1 mark)

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10. After a person had swum the length of a pool and climbed out of the water their skin temperature is likely to be very low but their deep body temperature is likely to be normal

a) Why is the skin surface likely to be cold for sometime after leaving water? (2 marks)

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11. State two roles of the secretion of the sebaceous glands. (2 marks)

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12. State two adaptations of tracheoles of insects for gaseous exchange. (2 marks)

13. Define the term accommodation of the eye. (1 mark)

a) Identify:

(i) Photochemical pigment for dim light vision. (1 mark)

(ii) Photochemical cell with low visual Acquity. (1 mark)

14. a) State the functions of each of the following in the mammalian skeleton.

(i) Intervertebral disc (1 mark)

(ii) Vertebrarterial canal (1 mark)

b) State one main structural difference between axis and atlas. (1 mark)

15. a) Differentiate between continous and discountinous variation. (1 mark)

b) State one example of numerical chromosomal mutations. (1 mark)

16. a) The respiratory quotient of an active person is normally in the range of approximately 1.0. If a person is deprived of food for 24 hours, the RQ drops to 0.75. Explain. (2 marks)

17. Explain what happens to Red blood cells when its placed in hypertonic solution (2 marks)

18. An animal has the following dental formula

I	3	c	1	pm	4	m	2
	3		1		4		3

a) Calculate the number of teeth. (1 mark)

b) Explain what would result from blockage of bile duct. (2 marks)

19. Explain how the guard cells are adapted to their functions. (2 marks)

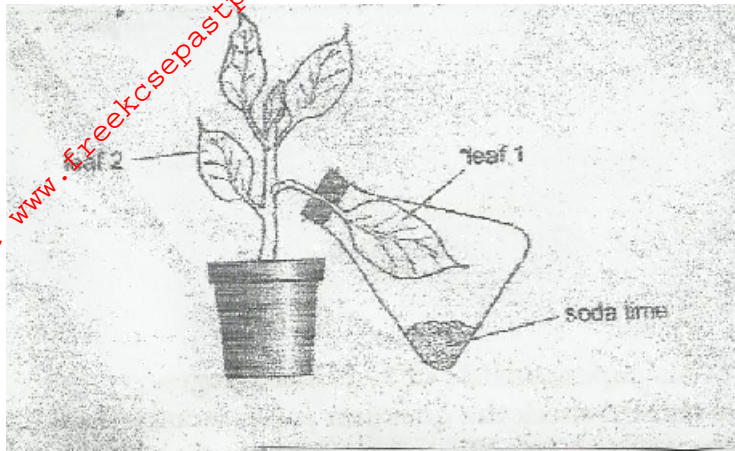
20. a) Give one application of osmosis in humans. (1 mark)

b) Explain the effect of each of the following on the rate of active transport.

(i) Oxygen concentration (1 mark)

(ii) Glucose concentration (1 mark)

21. In an experiment, the apparatus shown in the diagram below was left in the light for two days and then leaves 1 and 2 were tested for starch.



a) What was the aim of the experiment.(1 mark)

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b) Account for the observations made when the leaves 1 and 2 were each tested for starch. (2 marks)

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22. The table below shows an analysis of urine and of blood after filtration in the kidney.

substance	Percentage of substance	
	In blood	In urine
Glucose	0.10	0.00
Salts	0.30	0.60
Urea	0.03	2.00
water	90.00	97.00

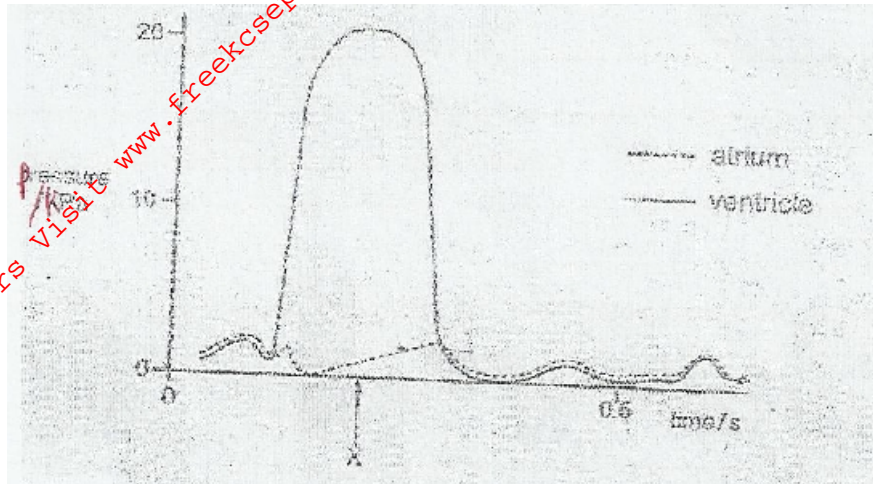
a) Account for the difference in concentration of urea in blood and urine. (2 marks)

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b) Explain why glucose is absent in urine yet present in blood. (1 mark)

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24. The graph shows pressure changes in the left atrium and in the left ventricle during the heart beat.



What is the state of the following valves at time x

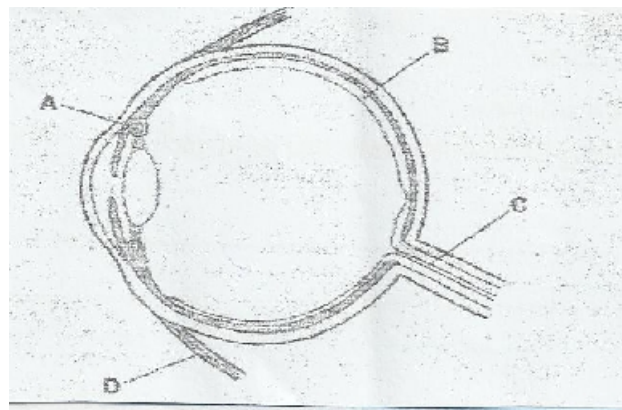
(i) Semi lunar valve in the aorta (1 mark)

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(ii) Bicuspid valve (1 mark)

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25. The diagram below shows a section through an eye.



i. Which part helps to focus an image on the retina? (1 mark)

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ii. State the functions of each of the parts marked A and B. (2 marks)

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26. a) Name the type of response exhibited by Euglena swimming towards fresh water from saline water. (1 mark)

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b) State the survival value of this response. (1 mark)

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27. a) State two differences between daughter cells from mitosis and from meiosis. (2 marks)

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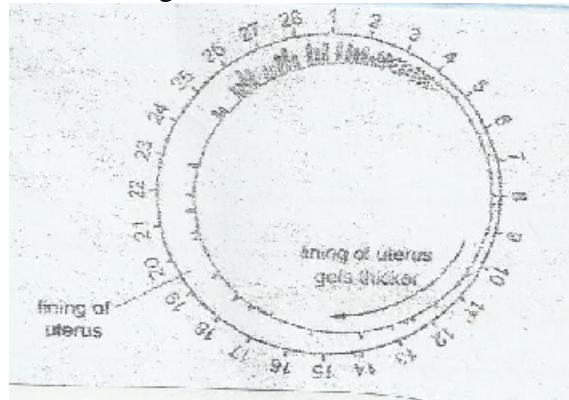
b) State one difference between Deoxyribonucleic acid and Ribonucleic acid. (2 marks)

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Give one example of numerical chromosomal mutation. (1 mark)

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28. The diagram shows the changes that occur to the uterus lining during the menstrual cycle.



i. Name the hormone responsible for;

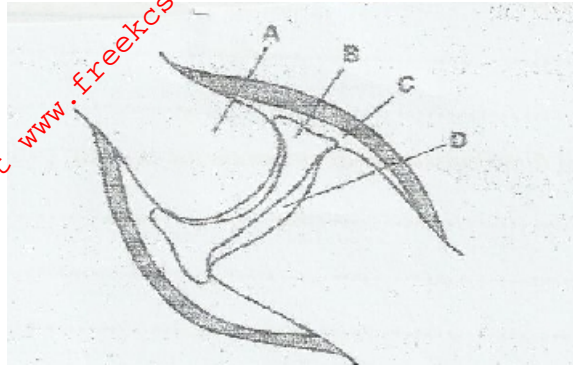
1. The events that occur in days 4 to 10. (1 mark)

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2. Ovulation. (1 mark)

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29. The diagram below shows a synovial joint.



a) Which area contains synovial fluid. (1 mark)

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b) Name the type of synovial joint shown above. (1 mark)

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30 Pure breeding pea plants with green pods are crossed with pure breeding pea plants with yellow pods. All the offspring's have green pods, plants from these offspring's are crossed. What colour are the pods of the next generation? (2 marks)