THE ROYAL EXAM SERIES

Kenya Certificate of Secondary Education

231/3 ─ BIOLOGY ─ Paper 3

PRACTICAL

FORM 4

TERM 2

DECEMBER 2021- 1³/₄ HOURS

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Name……………………………….……………………. Index Number:……..…………

School……………………………………………………………………………………..

Candidate's Signature……………………………………… Date………………………….

INSTRUCTIONS TO CANDIDATES

- Answer ALL the questions.
- You are required to spend the first 15 minutes of 1 ¾ hours allowed for this paper reading the whole paper carefully before commencing your work.
- Answers must be written in the spaces provided in the question paper.
- Additional pages must not be inserted.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidate's score
1	12	
2	14	
3	14	
Total Score	40 Marks	

This paper consists of 5 printed pages.Candidates should check the question paper to ensure that all pages are printed as indicatedand no questions are missing

1. You are provided with the photomicrograph of an onion outer epidermis as seen under light microscope

Mg=X1500
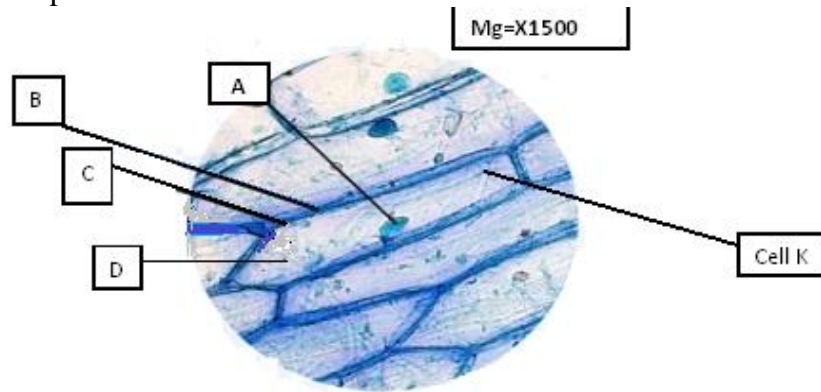
a) On the photograph, name parts labelled A, C, and D **(3mark)**

A …………………………………………………………………

C …………………………………………………………………

D …………………………………………………………………

a) Explain how the part **labelled B** is adapted to its function **(2marks)**

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………

b) Calculate the actual size of the cell **marked K**, give your answer in micrometres

(2marks)

c) The differences between the cells in the photograph and those obtained from an animal epithelial cells **(3marks)**

Onion epidermal cells	Animal epithelial cells

d) State the process that make the structures in the cell above appear more distinct

(1mark)

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e) In microscopic procedure in 1 (d) above name what was used to achieve the process

(1mark)

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2. The photographs below represent specimen labeled A, B, C and D

SPECIMEN A	SPECIMEN B
SPECIMEN C	**SPECIMEN D**

  i)   Name the type of placentation shown in specimen A and B   **(2 marks)**

         A………………………………………..………………………………...……

         B………………………………………………………..……………………….…

  ii)   Identify the type of sections from which specimen **C** and D was obtained?

                                                                          (2 marks)

         C………………………………………………………………………...…

         D………………………………………………………..……………………….…

  iii)   Classify the above specimen labeled D   **(1mark)**

         ……………………………………………………………………………………

  iv)   You are provided with specimen labeled **D1, D2, D3** and **D4**. Examine them
         Draw and label specimen labeled **D2**   **(3marks)**

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v) Giving a reason and state the agent of dispersal of the specimen   **(6marks)**

Specimen	Agent of dispersal	Reason
D1		
D3		
D4		

3. You are provided with the following. Solution **P**, **Q** and **Z**.
   (a) (i) Put 2 cm^3 of solution **P** into two test tubes labeled **A** and **B**. Add iodine solution drops into test tube **A**. Observe and record.   **(1 mark)**

   …………………………………………………………………………………………..

   (ii) To test tube **B**, add an equal amount of Benedict's solution. Heat to boil. Record your observation.   **(1 mark)**

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   (iii) From the results in (a) (i) and (ii), identify solution **P**.   **(1 mark)**

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   (iv). Put 2cm^3 of solution **Z** into a clean test tube labelled **C**. Add equal volume of Benedict's solution. Heat to boil.   **(1 mark)**

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   (v) Open the visking tubing provided, Pour solution **P** into the visking tubing and add 1cm^3 of the solution **R**. Tie the visking tubing and ensure there is no leakage. Pour solution **Z** into a clean beaker till it is half full. Immerse visking tube in the solution **Z** in the beaker. Allow it to stand for 30 minutes. After 30 minutes, take 2cm^3 of solution **Z** from the beaker into a clean test tube labelled **D**. Add equal amount of Benedict's solution. Heat to boil. Record your observation.   **(1 mark)**

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(vi) Account for the observation made in (v) above.   **(3 marks)**

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(b) i) Pour 2 cm^3 of solution **Q** into a clean test tube. Observe and record the color of solution **Q**.   **(1 mark)**

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ii) Add 1 cm^3 of sodium hydroxide into test tube containing solution **Q**. Record your observation.   **(1 mark)**

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iii) Explain the results observed in (b)(ii) above.   **(2 marks)**

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iv). what is the identity of solution **R**?   **(1 mark)**

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v) State **one** factor that can affect the process demonstrated in 3a **(v)** above **(1 mark)**

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