NAME: ……. INDEX NO: …….

SCHOOL: …… DATE : ……

CANDIDATE'S SIGNATURE: ……..

231/3
BIOLOGY
PAPER 3
(PRACTICAL)
JULY / AUGUST 2014
TIME: 1 ¾ HOURS

NANDI CENTRAL JOINT DISTRICT MOCK 2014

Kenya Certificate of Secondary Education (K.C.S.E.)
BIOLOGY
PAPER 3
TIME: 1 ¾ HOURS

INSTRUCTIONS TO CANDIDATES:

(i) *Write your **Name** and **Index Number** in the spaces provided.*

(ii) ***Sign** and write the **Date** of Examination in the spaces provided.*

(iii) *Answer all the questions in the spaces provided.*

(iv) *You are required to spend the first 15 minutes of the 1 ¾ hours allowed for this paper reading the whole paper carefully before commencing your work.*

(v) *Additional pages must not be inserted.*

(vi) *This paper consists of 4 printed pages.*

(vii) *Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.*

FOR EXAMINER'S USE ONLY

QUESTION	MAX. SCORE	CANDIDATE'S SCORE
1	12	
2	14	
3	14	
TOTAL	**40**	

SECTION A (40 MARKS)

Answer all questions in this section in the spaces provided.

1. You are provided with specimen Q, which is a fresh potato, liquid R (Hydrogen peroxide) and reagents 1% copper sulphate, 2M sodium hydroxide and iodine solution. Use them to carry out the tests below.

   (a) Using a scalpel, cut two small cubes measuring 1cm x 1cm x 1cm from the fresh potato. Place one of the cubes in boiling water for 10 minutes, then remove the cube and let it cool. Place it in a boiling tube and label it A.

   Place the fresh piece of potato cube in another boiling tube labelled B and then add equal amounts of hydrogen peroxide to each test tube at the same time. Write your observations.

   Observations:

   (i) Boiling tube A (1mk)

   ……

   (ii) Boiling tube B (1mk)

   ……

   (b) Explain your observation in (i) and (ii) above. (4mks)

   ……

   ……

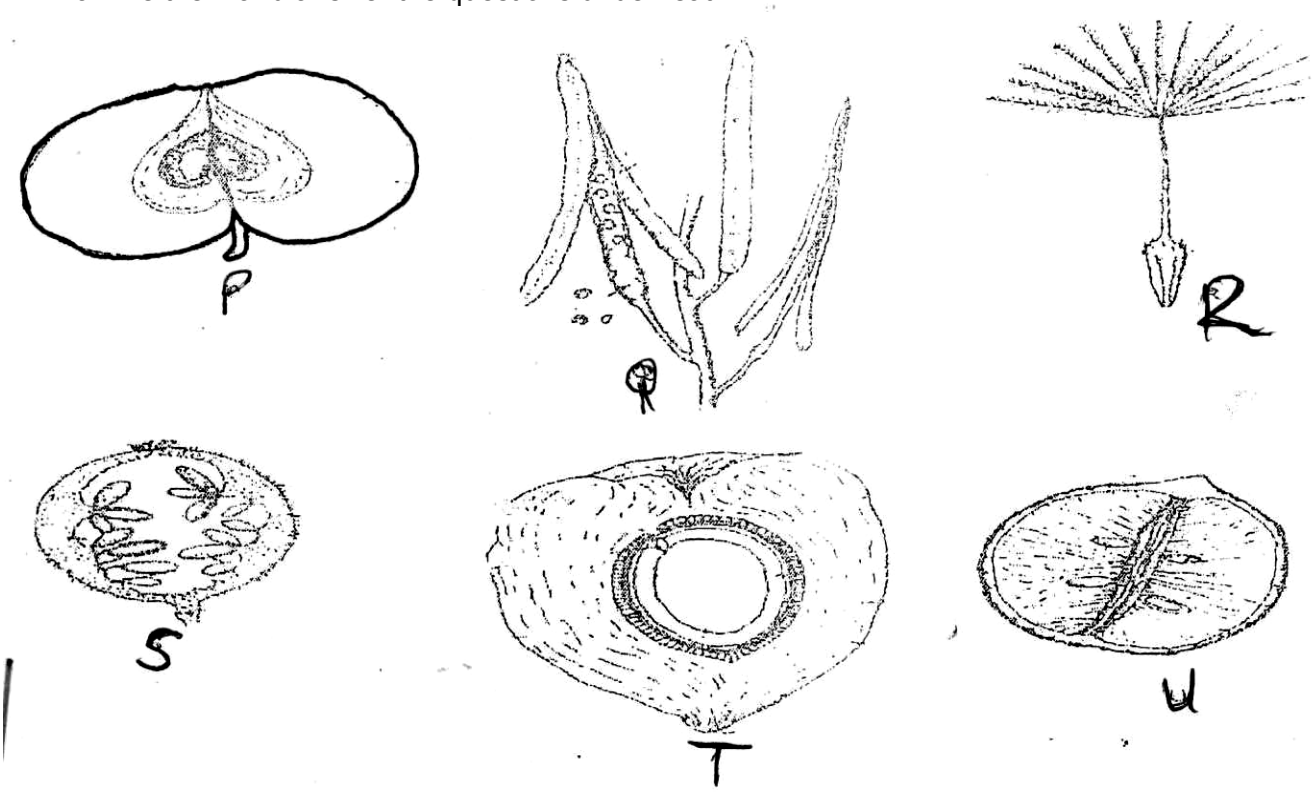
   ……

   ……

   (c) Crush a small piece of the remaining potato in a mortar. Add a little amount of distilled water to make a mixture. Use it to carry out food tests below. (6mks)

Food substance	Procedure	Observation	Conclusion

2. Below are photographs labeled P, Q, R, S, T and U of fruits obtained from different plants. Examine them and answer the questions underneath.



(a) With reasons, determine the modes of dispersal for the fruits labeled Q and R . (4mks)

Q:……..

Reasons:……

……

R:……..

Reasons:……

……

(b) State the form of placentation in Q, S, T and U. (4mks)

Q:……

S:……

T:……

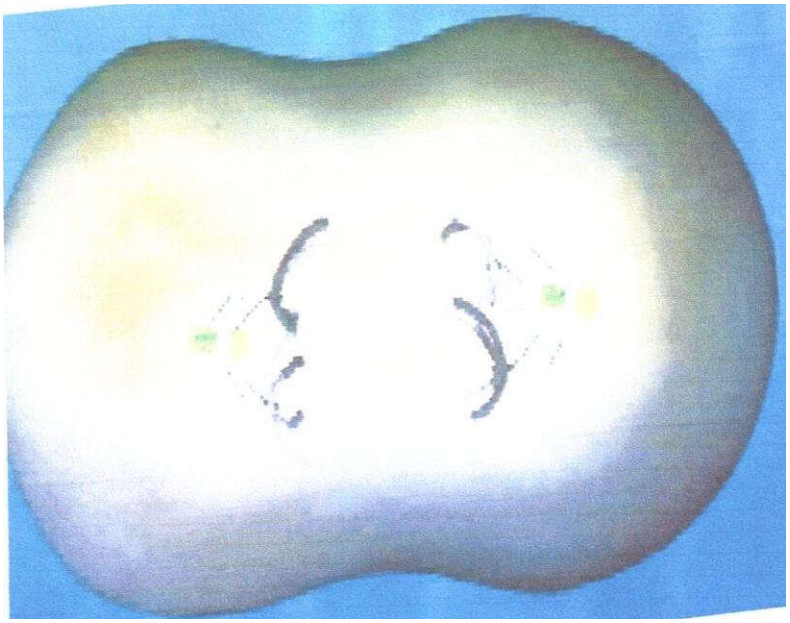
U:……

(c) With a reason, identify the type of fruit represented by specimen P. (2mks)

Type of fruit:……

Reason:……

(d) Below is a photomicrograph of a certain process in reproduction. Study it carefully and answer the questions that follow.



(i) Identify the process shown in the photomicrograph. (1mk)

……

(ii) Name the exact stage and place of the process shown in the photomicrograph.(1mk)

……

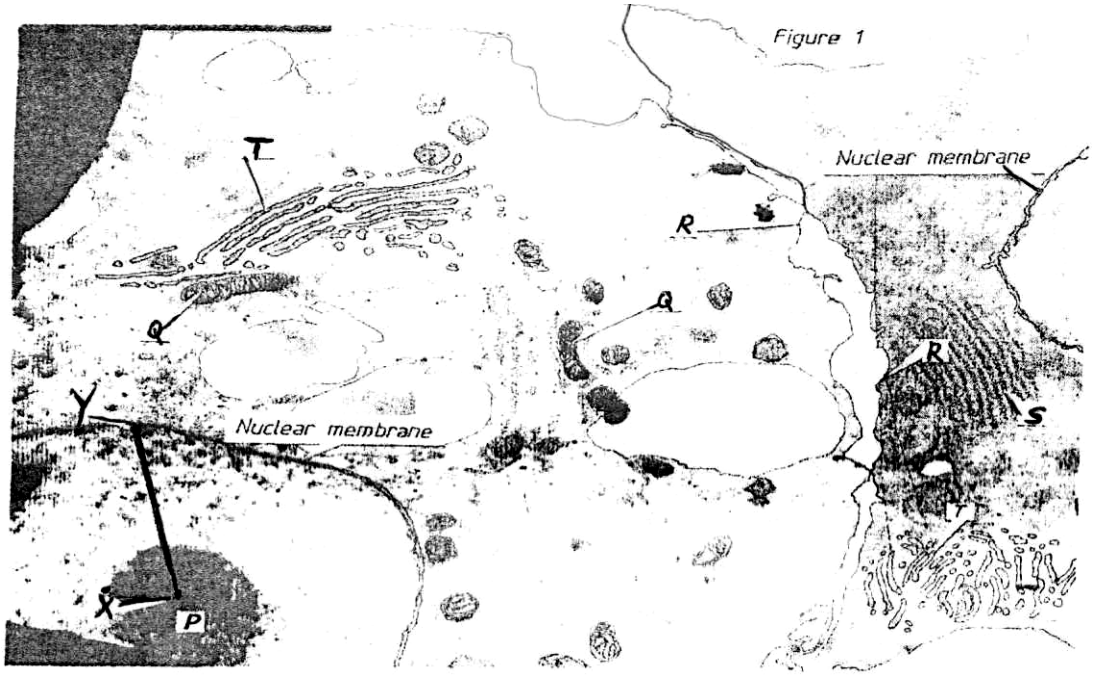
……

(iii) What is the significance of the process at its completion? (1mk)

……

……

3. Figure 1 represents parts of two adjacent liver cells as seen under an electron microscope. Study the micrograph and answer the questions that follow.



(a) (i) Name the organelles labelled P, R, T. (3mks)

P:……

R:……

T:……

(ii) State **one** function of each of the organelles labelled Q and S. (2mks)

Q:……

S:……

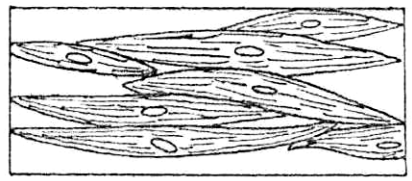
(iii) The magnification of the cells in the micrograph is x20,000. Use a ruler to measure the radius of the nucleus between points X and Y in millimeters.

Radius of nucleus:……..mm (1mk)

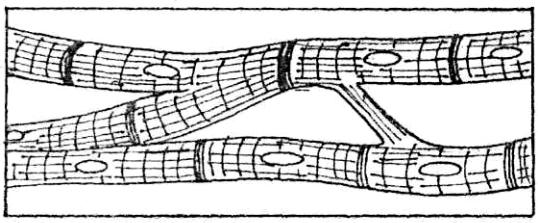
(iv) Calculate the actual radius of the nucleus before magnification in micrometers (µm)

Q: (1mk)

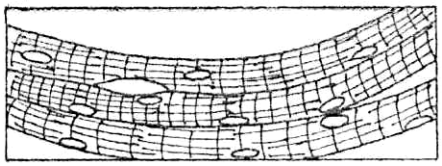
(b) Figure 2 represents different types of muscles. Study them carefully and answer the questions that follow.



B



C



D

(i) Identify the muscles labelled C and D. (2mks)

C:……

D:……

(ii) Using observable features only; state **two** differences between muscles labelled B and D. (2mks)

……

……

……

……

(iii) State **one** function of each of the muscles labelled B and C. (2mks)

Q:……

S:……/

(iv) Give **one** adaptation of a muscle labelled C to its function. (1mk)

……

……..

NANDI CENTRAL JOINT DISTRICT MOCK 2014
231/3 – BIOLOGY PAPER 3 - MARKING SCHEME

1. (a) (i) No gas produced; (1mk)
   (ii) Gas produced; (1mk)
   (b) (i) (In boiled potato cube) enzyme catalase is denatured; hence no reaction when hydrogen peroxide is added; (2mks)
   (ii) (Fresh potato cube) had an enzyme catalase; which broke / decomposed hydrogen peroxide to water and oxygen; hence production of gas. (2mks)

Food Substance	Procedure	Observation	Conclusion
Starch	(To food substance) add iodine solution;	Blue colour formed	Starch present
Proteins	To food substance add sodium hydroxide followed by copper II sulphate.	Light green mixture	Proteins absent

(6mks)

2. (a) Q – self dispersal; (2mks)
   Reason – Dihisent / line of weakness for opening.
   R – Wind dispersal
   Reason – it is parachute shaped for floatation in air. (2mks)
   (b) Q – Marginal placentation; (1mk)
   S – Parietal placentation; (1mk)
   T – Basal placentation; (1mk)
   U – Axile placentation; (1mk)
   (c) True fruit;
   Reason – Develops from the ovary alone. (2mks)
   (d) (i) Meiosis; (1mk)
   (ii) (Late) anaphase / (early) telophase (1mk)
   (iii) Resents to formation of gametes for reproduction; (1mk)

3. (a) (i) P – Nucleolus; (1mk)
   R – Cell membrane / plasma membrane; (1mk)
   T – Golgi body / apparatus; (1mk)

   (iv) Q – Carry out respiration (1mk)
   S – Site for protein synthesis;
   - Package and transport proteins and glycolipids; (1x 2 = 2mks)

   (v) 42mm $\pm$ 0.05mm
   (vi) Mg = $\frac{\text{image}}{\text{Actual}}$
   $20000 = {}^{42}/_{x}$✓
   $X = \frac{42}{20000} \times 1000um$
   = 2.1um✓
   (b) (i) C: cardiac muscles / heart muscles ($^{2}/_{2}$ = 1mk)
   D: Smooth muscles / visceral muscles;
   (ii) B: has many nuclei per muscle
   Cell; while D has one nuclei is located periphery; D nucleus is located at the centre Mark first 2 (1 x 2 = 2mks)
   (iii) B - cause locomotion upon contraction;
   C – causes heartbeat to pump blood upon contraction; (1x2 = 2mks)
   (iv) C has neuromuscular cells /myogenic to initiate and maintain contraction;
   - Has intercalated discs to spread waves of contraction;
   - Does not undergo fatigue to contract throughout life of animal;
   - Has many mitochondria to produce more energy for contraction;
   Mark first only (1 x 1 = 1mk)