KAPSABET HIGH SCHOOL

231/3 (***Kenya Certificate of Secondary Education***)

INTERNAL MOCK EXAM

BIOLOGY

Dec. 2020– 1 ¾ Hours

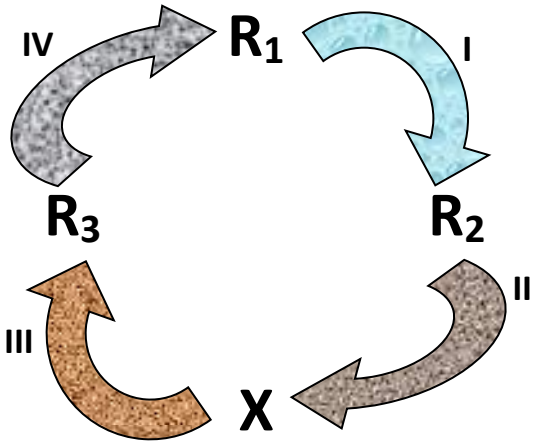
MARKING SCHEME

Instructions to candidates

a) *Write your Name, Index, Admission number and stream in the spaces provided above.*
b) *Sign and write the examination date on the spaces provided above.*
c) *Answer all questions in the spaces provided in the question paper.*
d) *All workings must be clearly shown where necessary.*
e) *You are required to spend the first 15 minutes of 1 ¾ hours allowed for this paper reading the whole paper before commencing your work.*
f) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
g) Candidates must answer the questions in English.

1. You are provided with specimens **R_1, R_2** and **R_3** representing different stages of plant development. Study the specimen carefully and answer questions relating to them.

   a). The chart below shows relationship between the specimens.



   i) Identify the process labeled **I** **(1 mk)**

   Germination;

   ii) State one **internal** and one **external** conditions necessary for the process identified in i) above. **(2mks)**

   - ***Internally: embryo maturity/sufficient hormones and enzymes/ adequate food store/ viability;***
   - ***Externally: optimum temperature/water/oxygen;***

   iii) Name the

   Stage of development **R_2** **(1mk)**

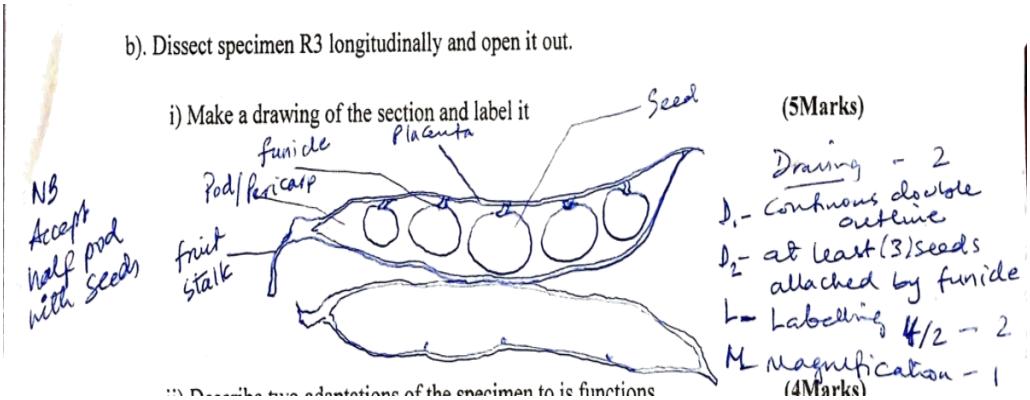
   Seedling

   Process immediately before **R_3** in process III **(1 mk)**

   Double fertilization

   b). Dissect specimen R3 longitudinally and open it out.

   i) Make a drawing of the section and label it **(5mks)**



ii) Describe two adaptations of the specimen to is functions **(4mks)**

a) Seeds; dispersed for propagation of the plant

b) Pericarp; - protection of immature seeds
- lines of weakness/sutures open up when R_3 matures and dries

2. Specimens **U** and **W** have been obtained from different plants.

a). i) Observe the leaves and differentiate them in reference to the following characteristics; **(2 mks)**

a) **m**

k	U	W
i) **s** Shape **)**	***Trifoliate/ ovate***	***Lanceolate***
ii) Texture	***Coarse/rough Limp***	***Smooth Firm***

ii) Using apparatus and materials provided, determine the average surface area of each leaf. **(4mks)**

Leaf **U**	Leaf **W**
(Correct procedure of working out surface area….. (2 marks for each leaf)	

iii) c). i) Draw **two** 1cm^2 squares across the midribs of each the four leaves, two of each **U** and **W.**

ii) Add some warm water to fill two thirds of a boiling tube.

ii) Insert one of leaves U, rolled, with the lower surface facing outward.

iii) Immediately begin counting the bubbles released on both its surfaces, within the two squares for 1 minute.

iv) Repeat the procedures i) – iii) for the second leaf **U**

v) Repeat the procedure for the two leaves **W**

vi). Record your results in the table below **(4mks)**

Leaf		Number of bubbles Lower surface	Average
U	1	***2+3 = 5***	**Accept values below 10 e.g. 5.5=6**
	2	***3+3 = 6***	
W	1	***10 + 12 = 21***	**Accept values above those for U**
	2	***9 + 14 = 23***	

vii) Comment on the observation made on the upper surfaces of the two types of leaves **(1 mk)**

No bubbles observed for both types of leaves due lack of stomata on the upper surface

d) Calculate the average number of bubbles per cm^2 for each leaf type. **(4mks)**

i) Leaf type U

Number of bubbles per cm^2 = $^{6}/_{2}$ = 3;

Hence average number of bubbles produced by U in 1 minute = 11x ½ x total surface area of leaf U;

ii) Leaf type W

Number of bubbles per cm^2 = $^{22}/_{2}$ = 11;

Hence average number of bubbles produced by U in 1 minute = 11x ½ x total surface area of leaf W;

e) i)Deduce a suitable habitat for plant type W **(1mk)**

Marshland/ soil with a lot of water/ water logged area/ river side

ii) Give a reason for your answer **(1mk)**

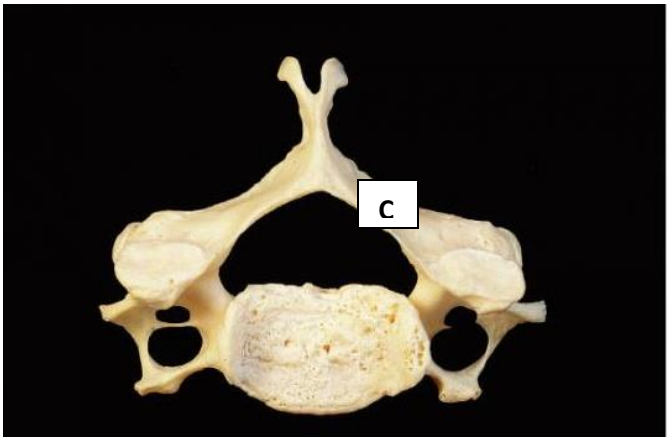
High rate of water lose can be supported in this habitat;

3. The photos provided for this question are of bones **P** and **S** from the same mammal. **P_1** and **P_2** are photos of the same bone from different views. Study the photographs and answer the questions that follow.

P_1

P_2

S



a) Identify the bones in the photos. Give a reason for each your answers. **(4 mks)**

i) P ***Atlas vertebra***

Presence of facets of articulation with condyles of the skull on anterior end

ii) S ***Typical Cervical vertebra***

Presence of branched transverse processes or cervical ribs

b) Name the parts labeled A, B and C **(3 mks)**

i) A ***….Transverse process***

ii) *B….**Vertebraterial canal/ Atlantal foramen***

iii) C ***…Lamina;***

c) What view of the bone is presented in photo **P_2?** **(1 mk)**

Dorsal view;

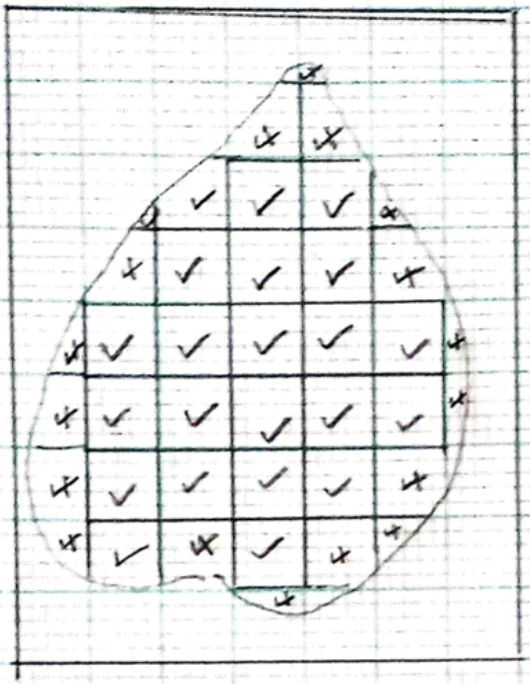
d) Identify one **similarity** and one **difference** between bones P and S **(2 mks)**

i) Similarity ***…..Large neural canal;***

……Transverse process present;

ii) Difference

	P	***S***
Cervical	***Absent***	***Present;***
Transverse processes:	***Wide/ wing like***	***Branched;***
Neural spine:	***Reduced/ non-existent***	***Prominent;***
Centrum:	***None***	***Large;***

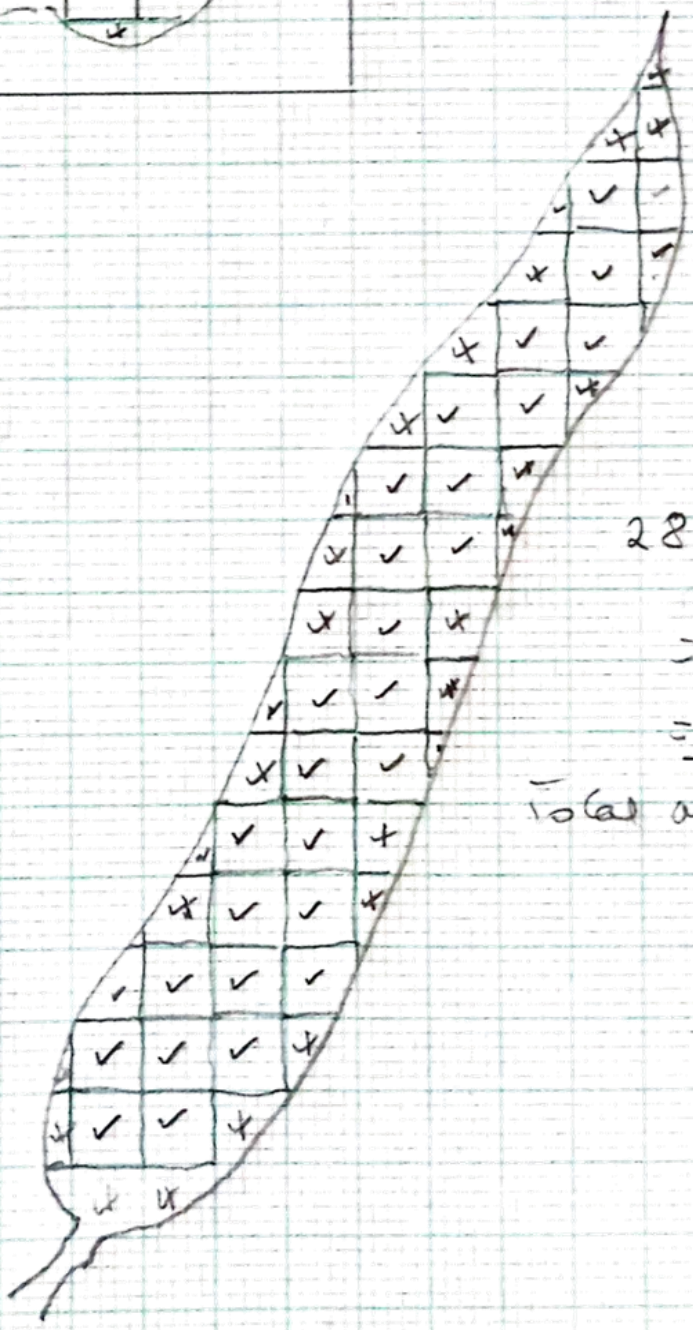


$22 + \frac{1}{2} \times 18$

$22 + 9 = 31\ cm^2$

Total area $31\ cm^2 \times 2$

$= 62\ cm^3$



$28 + \frac{1}{2} \times 32$

$= 28 + 16$

$= 44\ cm^2$.

Total area $= 144 \times 2\ cm^3$