BIOLOGY 231/3 K.C.S.E 2005
PRACTICAL QUESTIONS

1. You are provided with specimens labelled S_1S_2QX and Y.
The dichotomous key below can be used to identify the specimens.

1	a	Leaves simple	go to 2
	b	Leaves compound	Asteraceae
2.	a	Leaves green	go to 3
	b	Leaves purple	Commelinaceae
3.	a	Leaves parallel veined	Graminae
	b	Leaves net veined	go to 4
4.	a	Leaf margin smooth	go to 5
	b	Leaf margin serrated	go to 6
5.	a	Leaves hairy	Solanaceae
	b	Leaves not hairy	go to 8
6.	a	Leaves succulent	go to 7
	b	Leaves not succulent	Malvaceae
7.	a	Leaves with pointed tip	Crassulaceae
	b	Leaves with rounded tip	Crassulaceae
8.	a	Leaves ovate	Nyactaginaceae
	b	Leaves lanceolate	Anacardiaceae.

a) Using the dichotomous key identify the specimens. In each case show the sequence of steps (e.g. 1b, 2b, 3a, 6b etc.) in the key that you followed to arrive at the identity of each specimen. (10mks)

Specimen	**Step followed**	**Identity**
S_1	……	……
S_2	……	……
Q	……	……
X	……	……
Y	……	……

b) (i) Using the flowers, name the classes of the spermatophyte to which specimen S_1 and Q belong. (2mks)

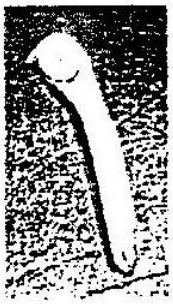
S_1 ……

Q ……

(ii) Give reasons for your answers in b(i) above (2mks)

2. Below are photographs labelled T_1 and T_2 of specimen which were obtained from the same animal. E

T1



T2

T1 ……

Reasons

(i) ……

(ii) ……..

T2 ……..

Reason ……

b) In photograph T1label four parts of the specimen. (4mks)

c) State how specimen S2.Draw and label the pistil (3mks)

d) Open the flower of specimen S2 Draw and label the pistil. (3mks)
Magnification (show your working) (1mk)

3. You are provided with a specimen labelled P.

a) Examine the inner and outer leaves of the bulb.

i) Record the differences between them. (1mk)

ii) Give reasons for the differences in (a) (i) above (1mks)

b) Separate the roots and aerial leaves from the bulb.
Crush the roots, aerial leaves and the bulb separately.
To each crushed material add 1ml of water. Put the extract from the materials into separate test tubes and label them. Using the reagents provided, test for the food substances in each of the extracts. Record the procedure, observations and conclusion in the table below.

Extract	Procedure	Observations	Conclusion
Roots			
Bulb			
Aerial Leaves			

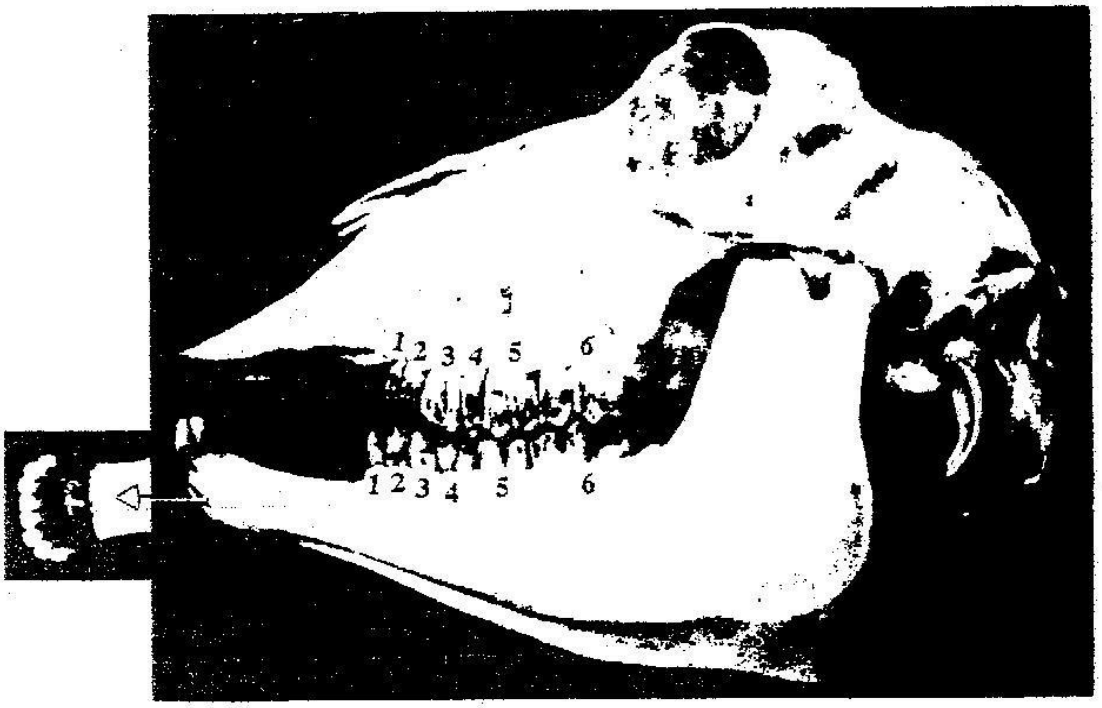
c) Account for the results obtained in (b) above.

(i) Roots (3mks)

(ii) Bulb (3mks)

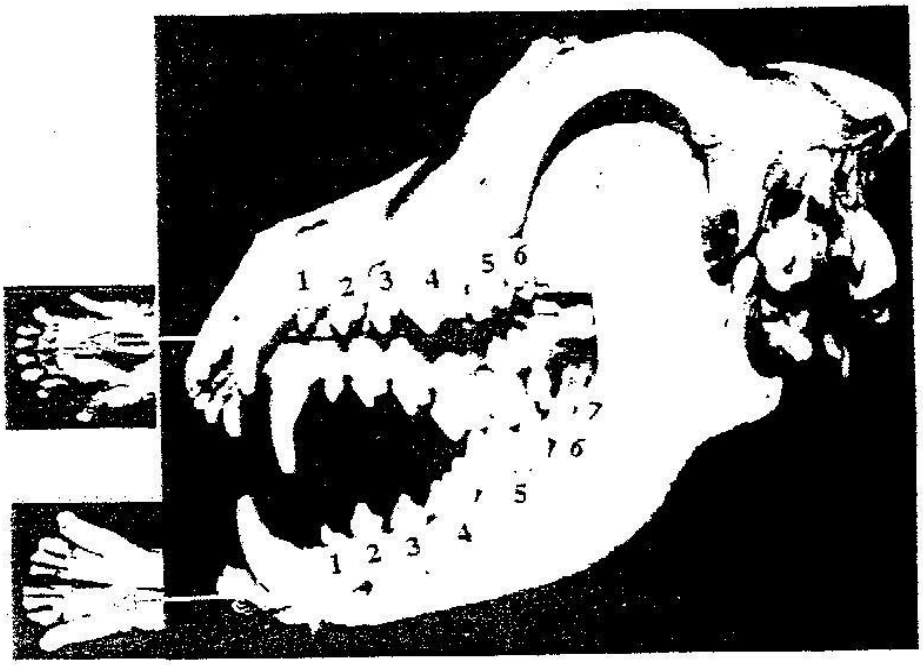
(iii) Aerial leaves (3mks)

Examine photograph labelled J with an inset of the front part of lower jaw and



photograph K with insets of front parts of upper and lower jaws.

Photograph J



Photograph K

c) Giving reasons, state the diet of the animals whose skulls are shown in the photographs.

J……. (1mks)

Reason ……. (3mks)

K …… (1mk)

Reason ……. (2mks)

d) Label the canine tooth in photograph J. (1mk)

e) Write the dental formula of the animals whose skulls are shown in photographs J and K.(The teeth that are not very distinct in the photographs are numbered) (2mks)

J…….

K ……..

f) Identify the photograph of the skull from which the specimens labelled T_1 and T_2 could have been obtained. (1mk)

g) In the appropriate diagram label the position where the pad would be found in a living animal. (1mk)