

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

1. You are provided with specimens labelled S₁S₂QX 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 | Nyctaginaceae |
| | 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 S₁ and Q belong. (2mks)

S₁

Q

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

2. Below are photographs labelled T₁ and T₂ of specimen which were obtained from the same animal. Examine them.



T₁



T₂

a) With reasons identify T₁ and T₂

T₁

Reasons

(i)

(ii)

T₂

Reason

b) In photograph T₁ label four parts of the specimen. (4mks)

c) State how specimen S₂ is drawn 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			

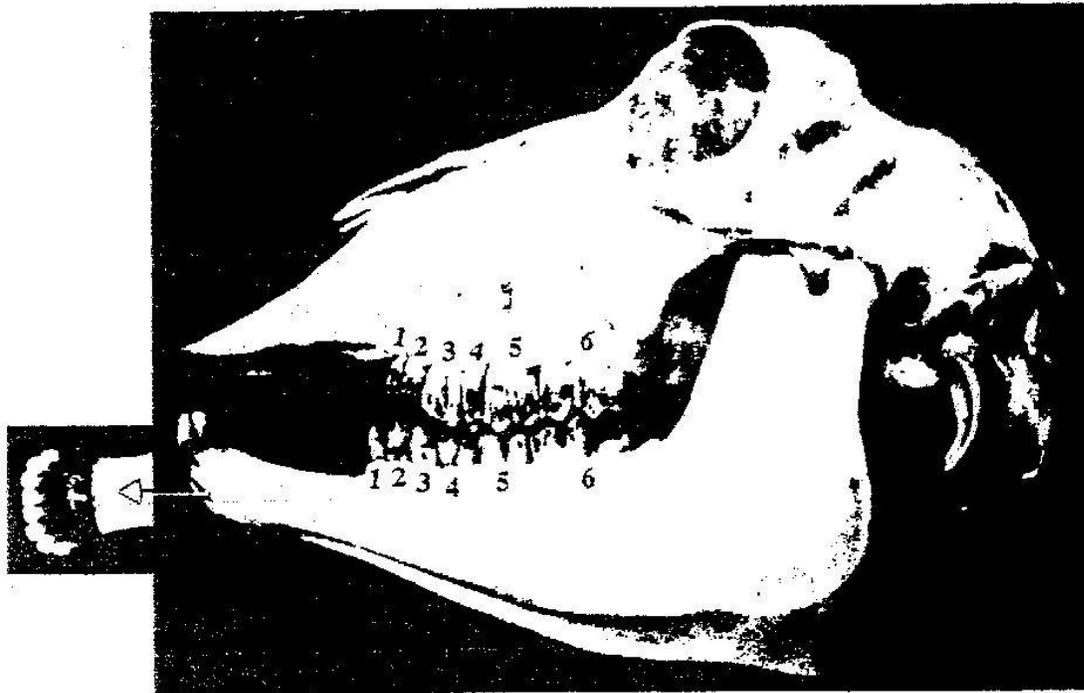
c) Account for the results obtained in (b) above.

(i) Roots (3mks)

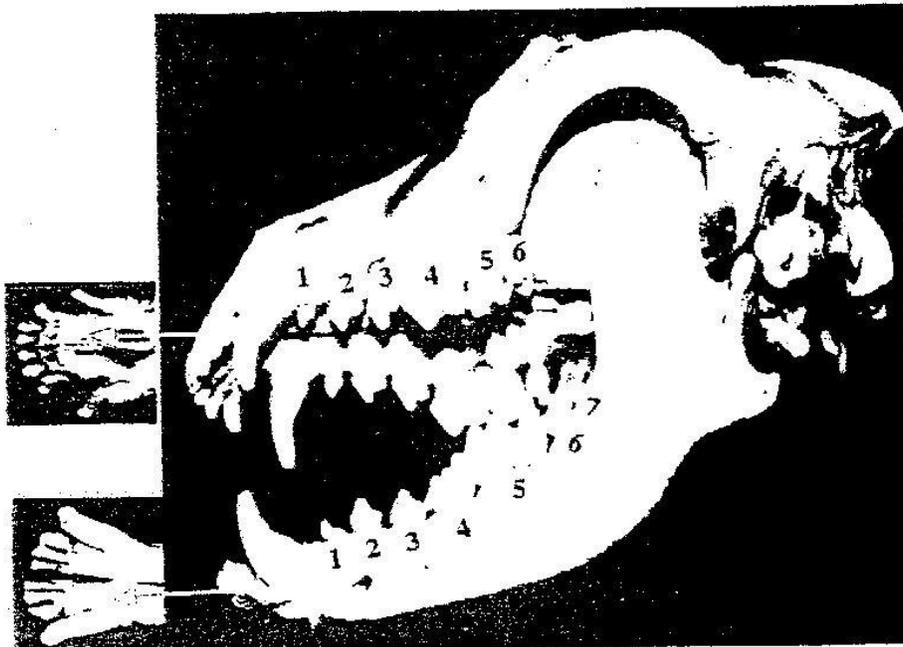
(ii) Bulb (3mks)

(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 T₁ and T₂ could have been obtained. (1mk)
- g) In the appropriate diagram label the position where the pad would be found in a living animal. (1mk)