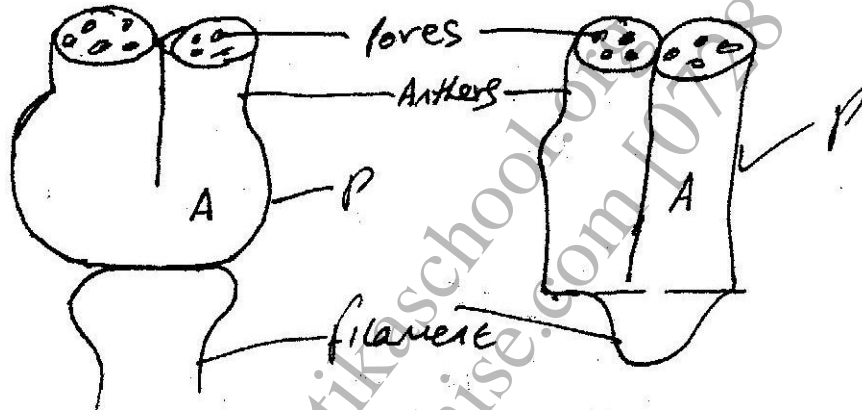


**BIOLOGY PAPER 231/2 K.C.S.E 1998
PRACTICAL MARKING SCHEME**

Confidential requirement: Specimen M- Solanum (Sodom apple), Specimen N – Hibiscus rosanensis

1. You are provided with specimen labeled M and N. Examine them.
- (a) Describe the arrangement of the stamens in specimens M and N.
M- Stamens; five in number arranged around/ arising from free/separate/lease of ovary/corolla/anthers below stigma
N- Many numerous stamens; filaments/ fused; to form a (common) stigma (tube) stamen below stigma.
- (b) Carefully remove one stamen from specimen M. Examine it using a hand lens. Draw and label it.



Conditions P- Filament shorter than anther $\frac{1}{4}$ of anther = filament
A- All parts to be drawn; continuous lines

- (c) Remove another stamen from specimen M. Cut the anther transversely into two equal parts. Tap the pollen grains from the lower half onto a microscope slide. Add a drop of iodine. Place a cover slip and press on the cover slip gently to spread out the pollen grains. Observe the pollen grains under medium power.

Draw one pollen grain.



State the magnification

- (d) Remove an anther from specimen N. Place it on a microscope slide. Add a drop of iodine. Cover with a cover slip. Press gently on the cover slip to spread out the pollen grains. Observe the pollen grains under medium power.

Draw one pollen grain



State the magnification X 100

- (e) State two observable differences between the corolla of specimen N and M
M- Smooth and small/ smaller
N- Rough/ Spiked and larger/larger
- (f) State four observable differences between the corolla of specimen M and N
- | | |
|---------------------------------------|---|
| M- Petals fused – gamopetalous | N- Free petals/ overlapping/corolla Polypetalous |
| M- Small corolla | N- Corolla large/ broad |
| M- Petals pointed tips | N- Petals rounded tips |
| M- Nectar guides not easily | N- Nectar guides noticed |

2. Confidential requirement: Solution L- Diastase/amylase

You are provided with a solution labelled L, starch solution and sodium chloride in two different concentration 0.1% and 1.4%. Place 3ml of starch solution in test tubes labelled 1,2 and 3. Add 3 drops of 0.1% sodium chloride to the test tube labelled 3. Add 3 ml of solution L to each test tube labelled 2 and 3

- (a) Place a drop of the contents from each test tube 1,2 and 3, on a white tile. To each drop add iodine solution. Record your results in the table below.

Test tube	Observation at start of experiment	Observation at end of experiment
Starch 1	Blue – black Blue/black/dark blue	Blue- black/blue/black/dark blue
Starch + 0.1% NaCl + L.2	Blue black as in T1	Retained the colour of iodine/yellow/brown/reddish/orange Acc. Traces of blue Rej. Red
Starch + 1.4% NaCl + LI. 3	Blue black as in T1	Retained iodine colour as in T2

- (b) Place the test tube in water bath maintained at 37°C. Allow to stand for 30 minutes. Place a drop of the contents from each test on a white tile. To each drop add iodine solution. Record your observations in the table.
- (c) Add equal amounts of Benedict's Solution in test tubes labelled 2 and 3 boil. Record your observations
- Test tube 2**
 Changed to green/ yellow
- Test tube 3**
 Colour changed to orange/ brown/ red/reddish/brick red
- (d) Why was the test tube labeled 1 included in the experiment?
 Control experiment

- (e) Account for the results in test tube 1,2 and 3 at the end of the experiment.
- Starch converted/ hydrated/digested/broken down; sugars/reducing/glucose and maltose. In test tubes 2 and 3
 - Starch was not converted into reducing sugars, in test tube 1; due to lack of NaCl and enzyme (sol-L)
 - More reducing sugar in test tube 3 than H₂; due to high concentration of NaCl in H₃
 - NaCl accelerates digestion/ hydrolysis of starch.
- (f) Suggest the Identity of solution L
Enzyme /diastase /amylase /ptyalin..
- (g) Why were the test tubes placed in a water bath maintained at 37⁰ C? Provide optimum temp/best temp/for enzyme activity. (Ideal/ most suitable.

3. Confidential requirements: Specimen R- Housefly, Specimen S- Bee.

You are provided with specimens labeled R and S. Examine them.

- (a) (i) Name the phylum and the class to which the specimens belong

Phylum.....Arthropoda

Class..... Insecta

- (ii) State two distinguishing features found in the members of

Phylum Presence of exoskeleton

Joined/appendage/limps

Class..... 3 pairs of legs/ six legs

3 body parts/ namely head, thorax, abdomen.

- (b) State two differences between the wings of specimen R and S

S..... 2 pairs

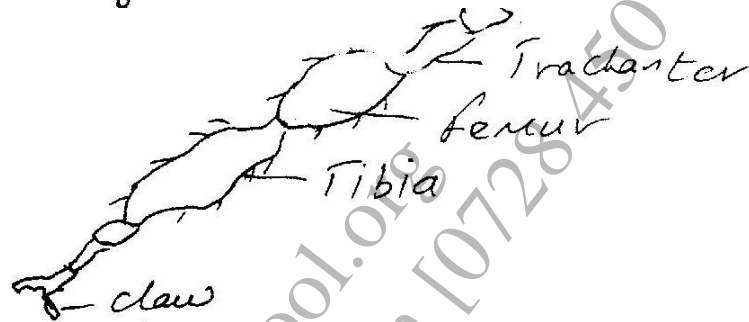
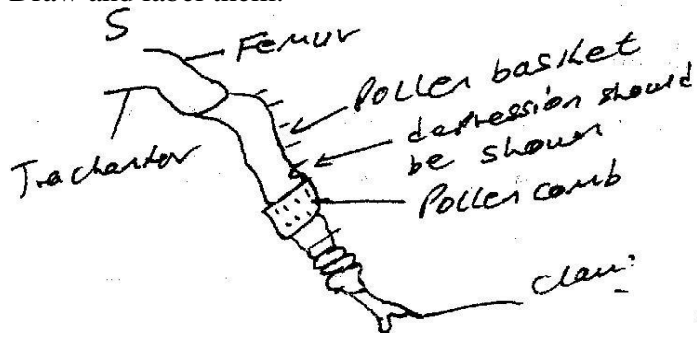
Absence of halteres/ hind wings

R..... 1 pair of wings

Has halteres/ hind wings

Modified wing

- (c) Remove one whole hind legs from specimens R and S.
Draw and label them.



- (d) Draw and label the front view of the head of specimen S.

