BIOLOGY
PAPER 3
(PRACTICAL)

1.(a)You are provided with the following:

- Specimen Y
  Hydrogen peroxide
- 2 test tubes in a test tube rack.
- 2 labels
- 10ml measuring cylinder.
- A scalpel.
- 2 wooden splints.
- 100ml beaker.

Procedure

(i) Label two test tubes **A** and **B**.

(ii) Measure $2cm^3$ of hydrogen peroxide and put in test tube **A**. Repeat the same procedure for test tube **B**.

(iii) Cut a small piece of specimen **Y** to two smaller pieces using a scalpel. Place one of the pieces in test tube A and retain the other piece for the subsequent procedure for test tube **B**.

(iv) Immediately, introduce a glowing splint into the mouth of the test tube. Record your observations in the table below.

(v) Put the other piece of specimen **Y** in an empty 100ml beaker then add 50ml boiling water from a hot water bath maintained at 80^0C. Leave the set up for 5 minutes

(vi) Remove specimen **Y** from the boiling water using a pair of forceps and place in test tube **B**. Immediately, introduce a glowing splint at the mouth of the test tube. Record your observations in the table below.

(a) Record your observations in this table

Test tube	**Observations**	
	On placing specimen Y	**On introducing a glowing splint**

A	More effervescence/frothing/bubbles produced√	Rekindles/relights√ (1mark)
B	No/less/littleeffervescence/frothing/bubble produced√	Does not rekindles√ (1mark)

(b) Explain your observations :.

(i) On placing specimen **Y** on test tube **A** (2marks)

- Enzyme (catalase) present in the specimen Y breaksdown hydrogen peroxide into water and oxygen gas;√ hence bubbles produced;√

(ii) On introducing the glowing splint on test **B** (2marks)

- Boiling specimen Y denatured the enzyme (catalase);√ hence fail to break down hydrogen peroxide into water and oxygen gas√

(c) State the role of experimental set up in test tube **B**. (1mark)

- **Control experiment;**√

(d) Specimen **Y** is an organ in animals. State its **one** other function apart from the one being investigated above. (1mark)

Mark first one

- Blood sugar regulation;√
- Osmoregulation
- Regulation of metabolism
- Deamination

(e) You are provided specimen **X**. Make a longitudinal section through one of the specimen X using the scalpel to obtain two halves.

(i) Carefully observe **one** of the halves and make a drawing. on the diagram label the position of the plumule and radicle. (3marks)

(ii) State **one** internal factor necessary for the germination of specimen **X**. (1 mark)

- Hormones;√
- Enzymes
- viability

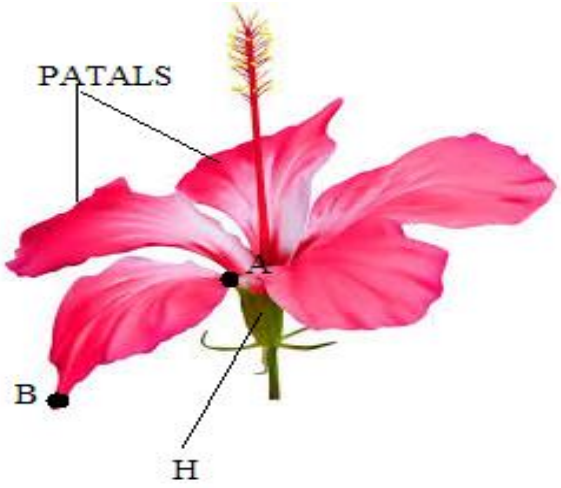
(iii) Using a mortar and pestle provided, crush the remaining pieces of **X** while adding water to form a solution. Transfer the solution into a 50ml beaker provided and label as solution **X**. Using the reagents provided, test for the food substance present in solution **X**. (3marks)

FOOD SUBSTANCE	PROCEDURE	OBSERVATION	CONCLUTION
PROTEIN	Put 2cm³ of solution X in a clean test tube .add copper(II) sulphate drop by drop by shaking after each drop ;√	Puple/violet observed;√	Protein present;√

(iv) Under what circumstance is the food present in solution **X** oxidized in the human body (1mark)

- Extreme starvation;√

2.Below is a plant organ used in the study of biology. Study it and answer the questions that follow.



(a) Identify the organ above (1mark)

- Flower;√

(b)State the function of the part labeled **H** (1mark)

- Protects the flower during bud stage;√

(c) State the term used to describe the petals. (1mark)

- Polypetalous;√

(d) State with a reason the class into which the organ belongs.

Class (1mark)

Dichotyledonae;√

Reason (1mark)

(e)(i) Using observable feature only, name the argent of pollination (1mark)

- Insects;√

(ii) Give a reason for your answer in (e)(i) above. (1mark)

- Brightly coloured petal to attract the insect;√

(f) State the importance of the organ to a plant (1mark)

Pollination;√

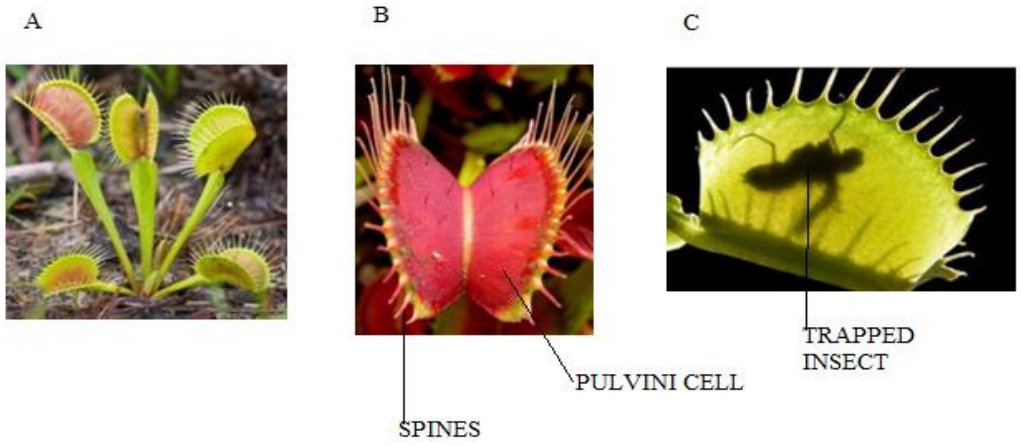
(g) Measure the length of the petal from point A to B. (1mark)

- 3.5 cm;√

(f) If the actual length between A and B is 5cm, calculate the magnification of the photograph above. (2marks)

- Magnification=$\frac{\text{length of image}}{\text{Object length}}$

$=\frac{3.5;\surd}{5}$ =X 0.7;√



3.(a) Below are photographs of **Venus flytrap** (an insectivorous plant). Study them and answer the questions that follow.

(i) Name **one** major nutrient that is deficient in the soil where the above plant grows.(1mark)

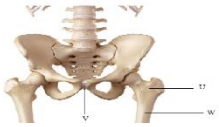
- Nitrogen ;√

(ii) Name the type of response shown by plate **C** (1mark)

- Haptonasty;√

(iii) Describe how the above plant traps the insect (3marks)

- When the sensitive hairs on the leaves are touched by the landing insect;√the mid rib lose water rapidly by osmosis;√causing the trap to spring hence closing the leaves with the spines interlocking;√

(b) Below is a  mammalian skeleton. Study it carefully an answer the questions that follow.

(i) Name bone **W** (1mark)

- Femur;√

(ii) Name the type joint formed by bone **W** at the distal end. (1mark)

- Hinge;√

(c) The part labeled **V** has one major adaptation:

(i) Identify the adaptation (1mark)

- Elastic cartilage;√

(ii) Explain the importance of the adaptation in (c)(i) above to females (1mark)

- Expand during birth in females to allow for the foetus;√

(d) State the function of the part labeled **U** (1mark)

- Allow for the passage of nerves,blood vessels and muscles;√

(e) Distinguish between **pitching** and **rolling** as used in bony fish (1mark)

- Rolling-rocking from side to side
- Pitching-upword and downward movement of the fish;√