1. You are provided with olive oil, liquids labeled L1 and L2, and an Irish potato. Label test tubes A and B. Place 2cm3 of water into each test tube. Add 8 drops of olive oil into each test tube. To test tube A, add 8 drops of liquid L1 Shake both test tubes. Allow to stand for 2 minutes.

(a) (i) Record your observations *(2 marks)*

Test Tube **A**

Forms an emulsion ✓ | Cloudy suspension. Whitish emulsion.
- Oil is suspended |

Test Tube **B**

No emulsion formed ✓ | oil forms a layer | two immiscible layer

(ii) Name the process that has taken place in test tube A *(1 mark)*

Emulsification ✓

(iii) State the significance of the process named in (a) above *(1 mark)*

- Break fat into small fatty droplets to increase SA for enzyme action | digestion

(v) Name the digestive juice in humans that has the same effect on oil as liquid L1 *(1 mark)*

Bile juice ✓

(v) Name the region of the alimentary canal into which the juice is secreted *(1 mark)*

Duodenum ✓

(b)

(i) Label two test tubes C and D place 2cm3 of liquid L2 into each test tube. Add a drop of iodine solution into each test tube. Record your observations. *(1 mark)*

A Blue-black colour is formed ✓

(ii) Suggest the identity of L2 *(1 mark)*

Starch Solution ✓

(iii) Cut a cube whose sides are 1cm3 from the Irish potato. Crush the cube to obtain a paste. Place the paste into a test tube labeled C. add 2cm3 of amylase solution to both C and D. Leave the set up for at least 30 minutes.

Record your observations *(2 marks)*

C

- Blue black colour disappear ✓ | Soln turns brown | yellow.

D

Blue - black colour remain / Persists

(iv) Account for the result in (b)(iii) above *(2 marks)*

- Enzyme amylase breaks down starch into sugar / maltose / Reducing sugar
that does not give blue - black colour with iodine

(c) Cut another cube whose sides are 1cm from the Irish potato. Crush the cube. Place the crushed paste into a test tube. Carry out food test with reagents provided. Record your procedure and results.

- There was no enzyme to break down starch.

Procedure: *(1 mark)*

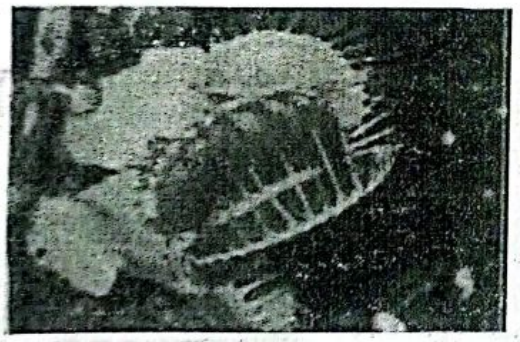
- Put the Paste into a clean test tube
- Add 2ml of Benedict's solution, Heat Shake
- Heat the mixture and observe the colour change.

Mark the Procedure -1mk.

Results: *(1 mark)*

Blue Colour of Benedict's Solution remain

2. Study the photographs A and B that shows part of plants in natural habitat.



A

B

a) Name the type of the plant response shown in:

i) A Haptonasty / Nastic response .....(1 mark)

ii) B Thigmotropism .....(1 mark)

b) Explain the mechanisms of the response in

A - Plant secret sugary secretions that attract insects (3 marks)

- Insect trigger hairs in the leaves / midrib. Midrib cell loses water by osmosis the midrib becomes flaccid causing the trap to spring and thus trapping

B At the Point Auxins/IAA ✓① migrate to the opposite (5 marks)
side ✓① High auxin Conc causes it to grow faster ✓①
than the side of Contact ✓① leading to
Continuous coiling of the shoot/tendril ✓① along
the support material

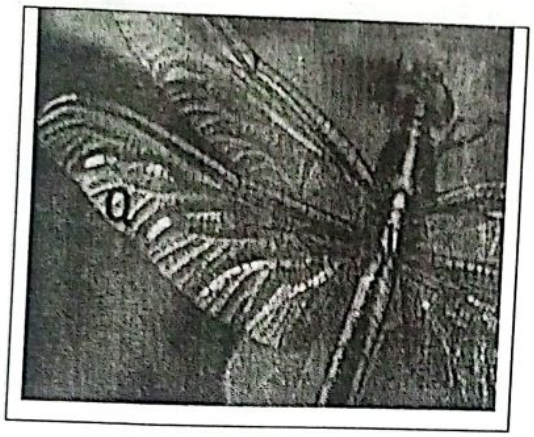
c) State the biological significance of the response to plants in

A – Enable feeding in Insectivorous ✓① Plant (1 mark)
– Enable Plant growing ✓① in Poor soils to get Nitrogenous comp
B Provide Support ✓① to expose leaves for (1 mark)
Photosynthesis, flowers for Pollination, fruits and
Seeds for dispersal

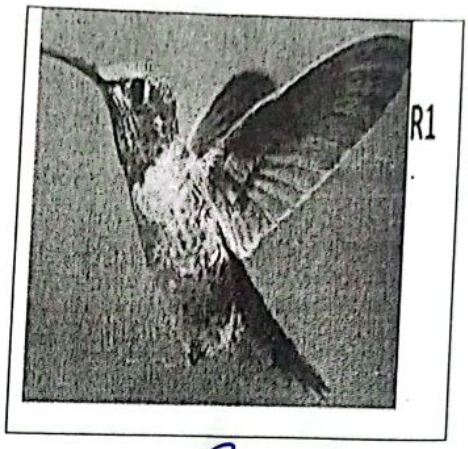
d) Suggest the nature of the habitat that plants with the type of response A grows. (1 mark)

– Marshy areas/Waterlogged lands
– Nitrogen deficient soils (CWTTE)

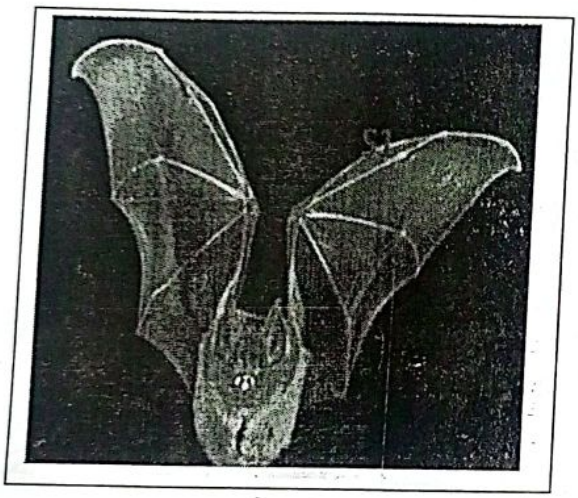
3. Study photographs shown below then answer the questions.



Q

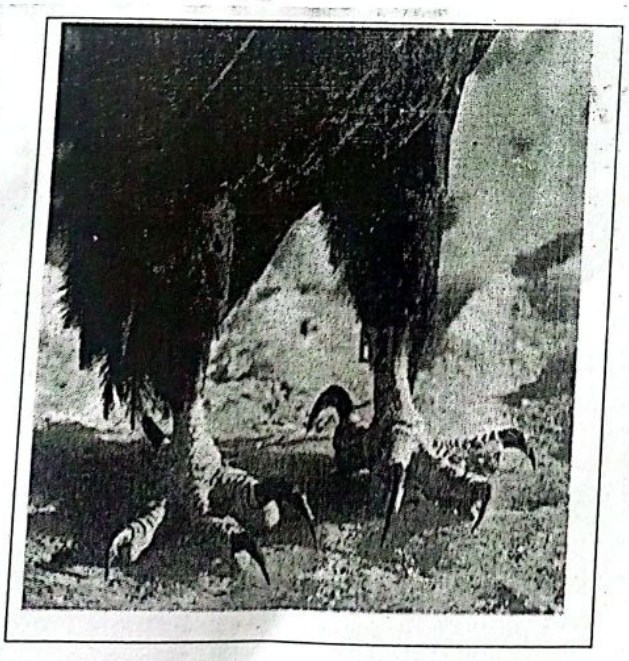


R

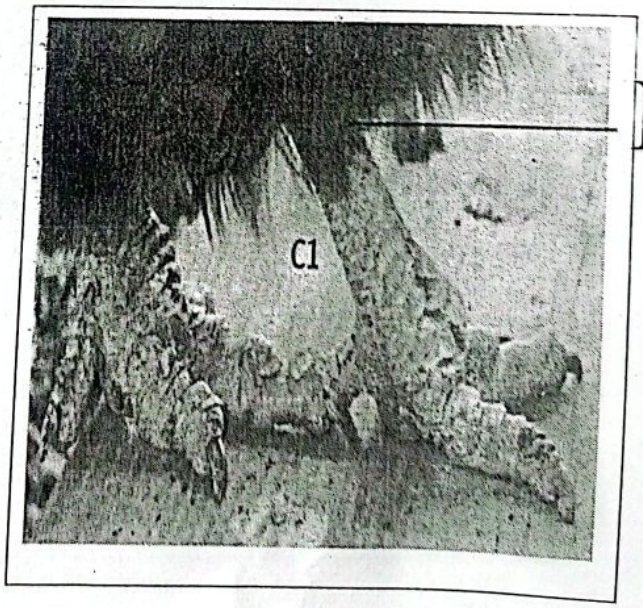


S

A



B



M

C

(a) State the type of evolution represented by structures **Q1, R1** and **S1. (1mk)**

Convergent Evolution

b) Explain the type of evolution identified in (a) above. **(1mk)**

Structures are from different embryonic origin but are modified to perform the same function.

(c) Give the evolution term used to describe structures;

(i) **Q1, R1** and **S1. (1mk)** Analogous Structure.

(ii)**A1, B1** and **C1. (1mk)** Homologous Structure.

d). what type of evolution is illustrated by the limbs (**A1, B1** and **C1**)? **(1mk)**

Divergent evolution.

e). (i) Name classes for organisms labeled **Q, R** and **S.**

Q.....Insecta rej: Insect

R.....Aves **(1mk)**

S.....Mammalia rej: Mammal **(1mk)**

(ii) Give two reasons for placing **S** in the class above **(2mks)**

- Has skin covered in fur
- Has mammary gland.

f) (i) Suggest the diet of animals **B** and **R.**

B.....Flesh/meat **(1mk)**

R.....Nectar **(1mk)**

(ii) How is beak of animal **B** adapted to its function? **(1mk)**

It's strong/Sharp and curved to tear flesh.