

GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate of Education Examination

0510 BIOLOGY 1

JUNE 2022

ORDINARY LEVEL

Centre Number	
Centre Name	
Candidate Identification Number	
Candidate Name	

Mobile phones are NOT allowed in the examination room.

MULTIPLE CHOICE QUESTION PAPER

One and a half hours

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.

1. USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Before the examination begins:

3. Check that this question booklet is headed "Ordinary Level – 0510 Biology 1"
4. Fill in the information required in the spaces above.
5. Fill in the information required in the spaces provided on the answer sheet using your HB pencil:
Candidate Name, Exam Session, Subject Code and Candidate Identification Number.
Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.

How to answer the questions in this examination

6. Answer **ALL** the **50** questions in this Examination. All questions carry equal marks.
7. Non-programmable Calculators are allowed.
8. Each question has **FOUR** suggested answers: **A, B, C** and **D**. Decide which answer is appropriate. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen.

For example, if **C** is your correct answer, mark **C** as shown below:

[A] [B] ☒ [C] [D]

9. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
10. Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
11. Do all your rough work in this booklet using the blank spaces in the question booklet.
12. **At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT.**

Turn Over

2022/0510/1/MCQ

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SECTION I

Questions 1 -7

(Seven questions)

Directions: Each of these questions or incomplete statements is followed by four suggested answers. Select the best answer in each case and mark the answer sheet appropriately.

1. Which group of bacteria would cause a decrease in soil fertility?

A Saprophytic bacteria.
B Nitrogen fixing bacteria.
C Denitrifying bacteria.
D Nitrifying bacteria.

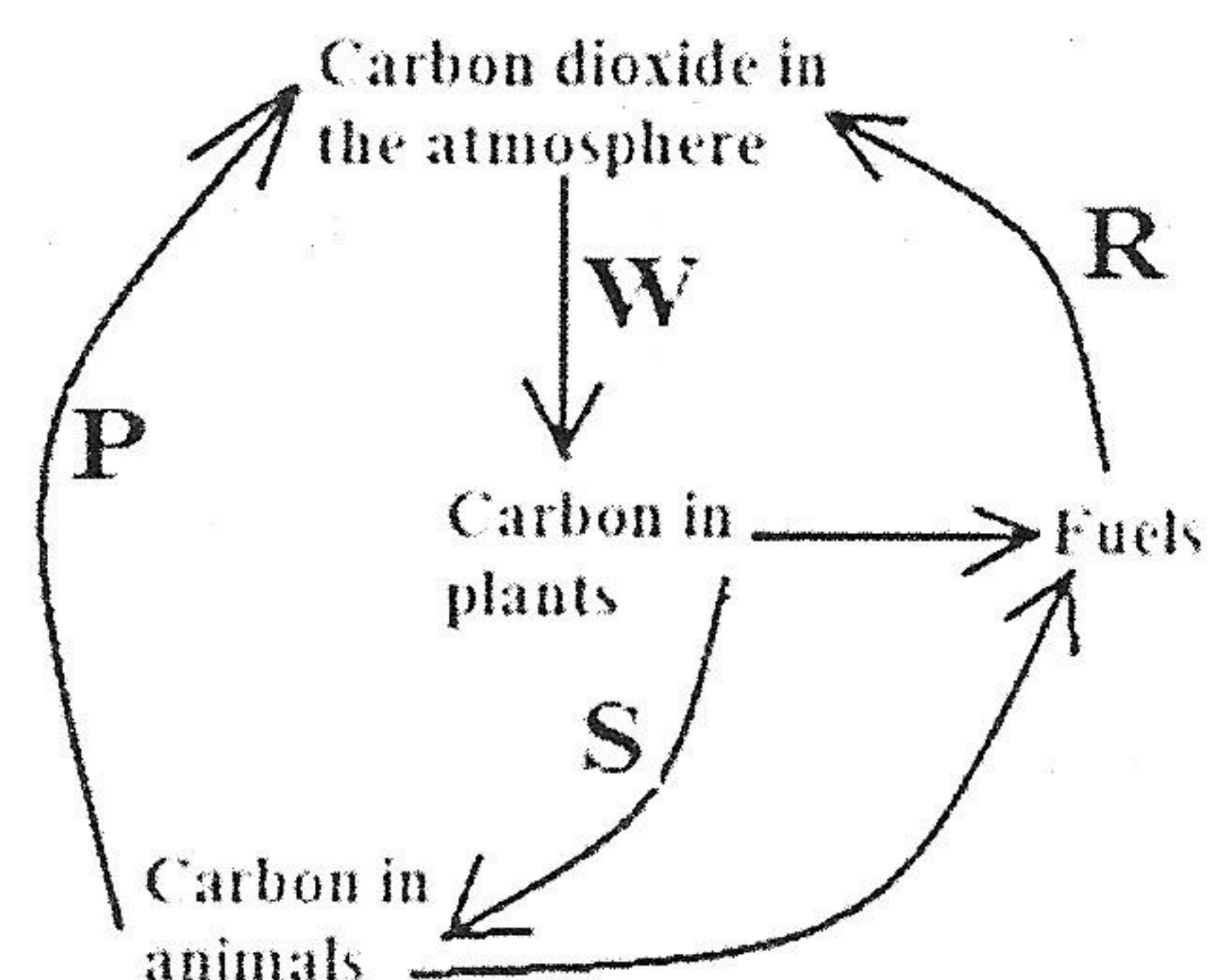
2. It is one of the reasons for the success of insects in nature.

A They have wings that enable them reach out to distant environments.
B They have an endoskeleton that protects their inner structure.
C They have only simple eyes which are well adapted for vision.
D They reproduce sexually.

3. A normal skinned man who is married to a normal skinned woman finds out that their last baby boy is an albino. What are the probable genotypes of the couple?

A Aa and aa.
B AA and aa.
C Aa and AA.
D Aa and Aa.

4. The diagram below shows the carbon cycle.



Which of the following processes are represented by the letters P, W and R?

	P	W	R
A	Respiration	Photosynthesis	Combustion
B	Respiration	Combustion	Decay
C	Respiration	Combustion	Oxidation.
D	Combustion	Respiration	Decay

5. Which of the following organisms is a producer?

A Yeast.
B Mushroom.
C Spirogyra.
D Man.

6. A part of the human eye that refracts light.

A Iris.
B Cornea.
C Pupil.
D Retina.

7. A food sample was tested with Benedict's solution and a brick- red coloration was observed. The food sample contained;

A Starch.
B Protein.
C Fats.
D Glucose.

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SECTION II
Questions 8 - 20
(Thirteen questions)

Directions: This group of questions relates to biological diagrams. Select the best answer for each question.

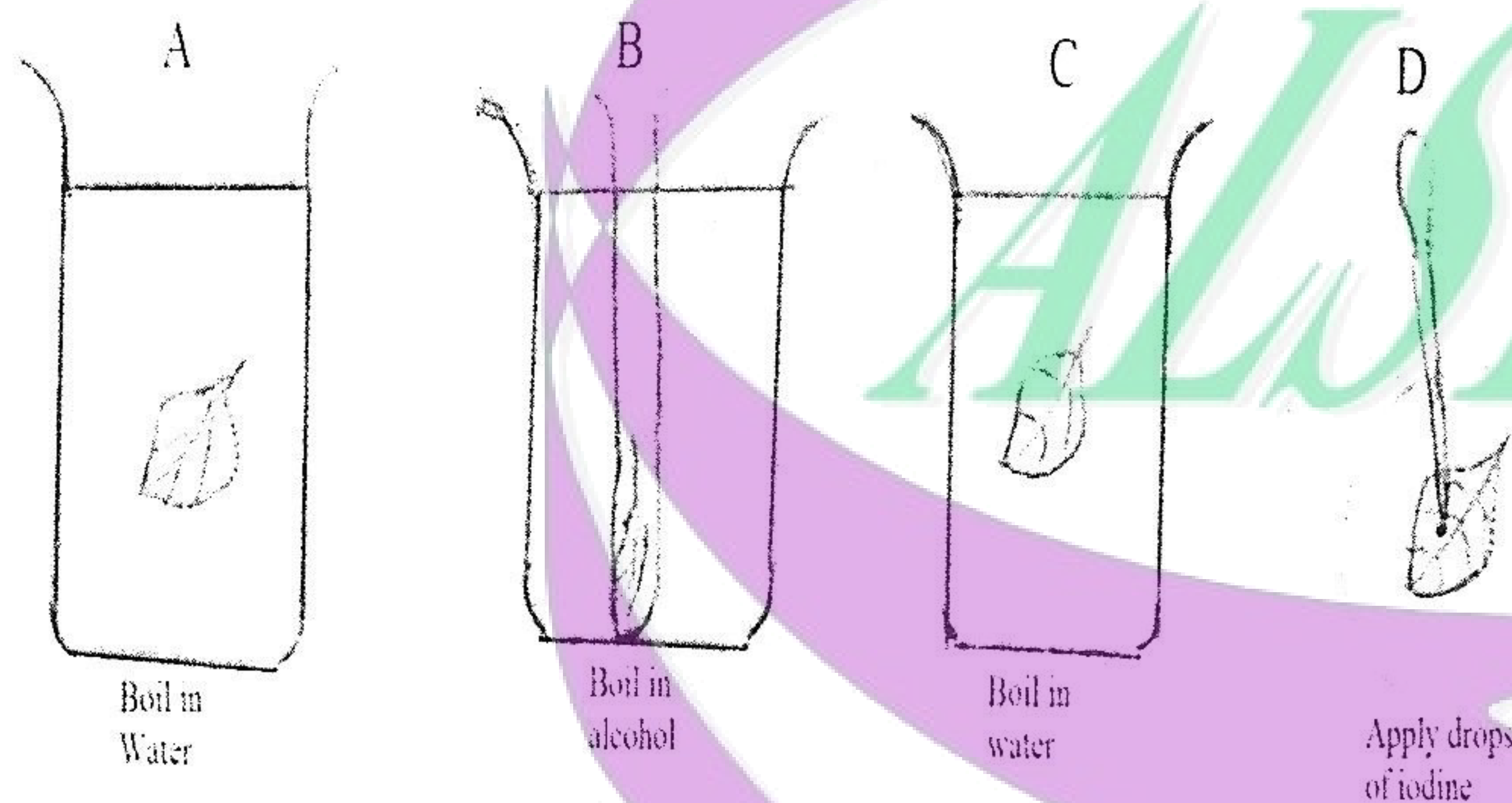
8. The diagram below is a food chain in which the letters W, Q, X and Y represent some organisms.

Plants → W → Q → X → Y

Extinction of organism Q will

A	Have no effect on the chain.
B	Lead to an increase in the population of X.
C	Lead to a decrease in the population of W.
D	Lead to an increase in the population of W.

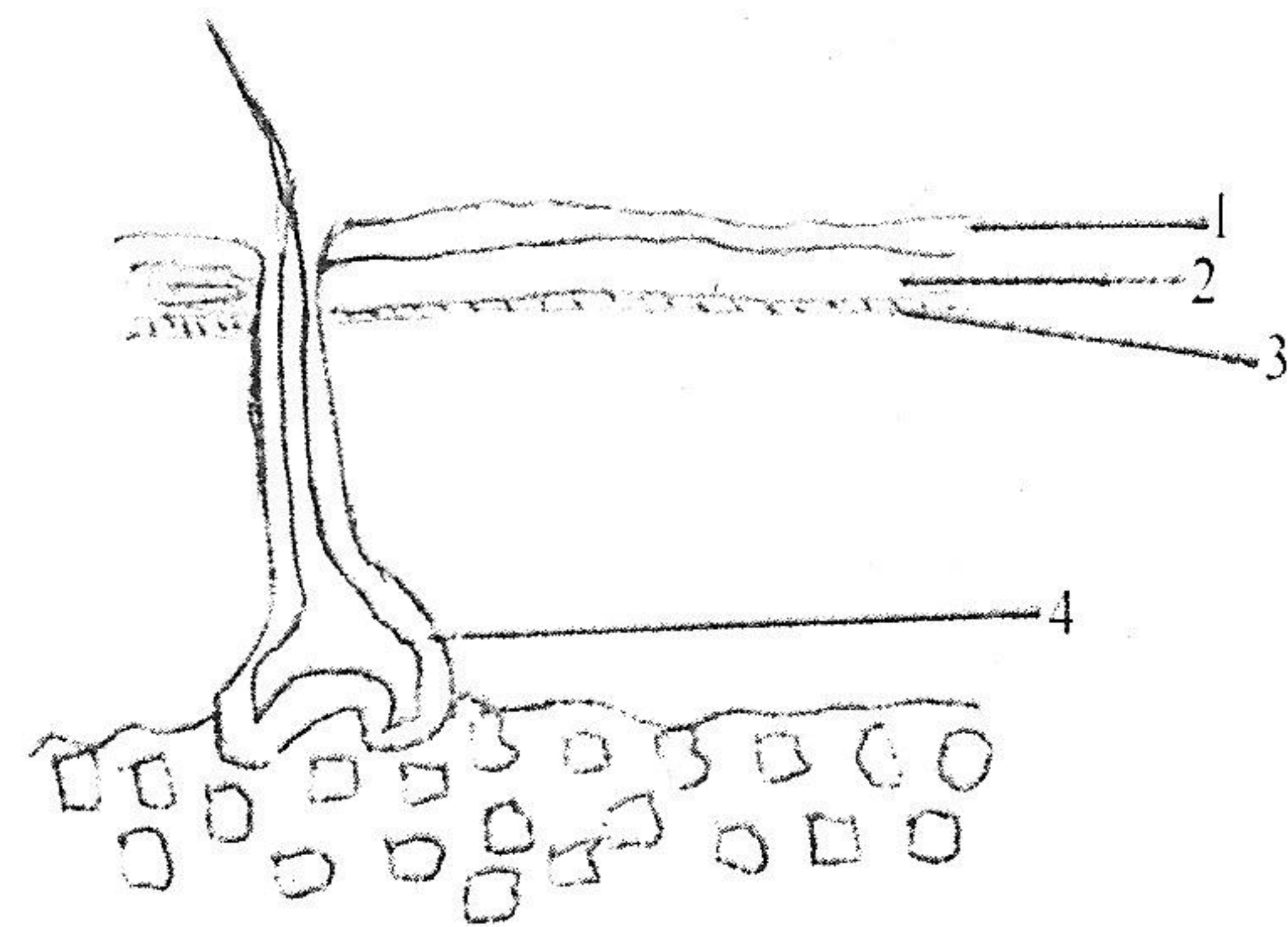
9. The diagrams below show the steps involved in testing for starch in a leaf. At which step is the leaf decolorized?



10. Which part in the diagram of the mammalian brain is responsible for balance?

- A Cerebrum.
B Medulla oblongata.
C Cerebellum.
D Midbrain.

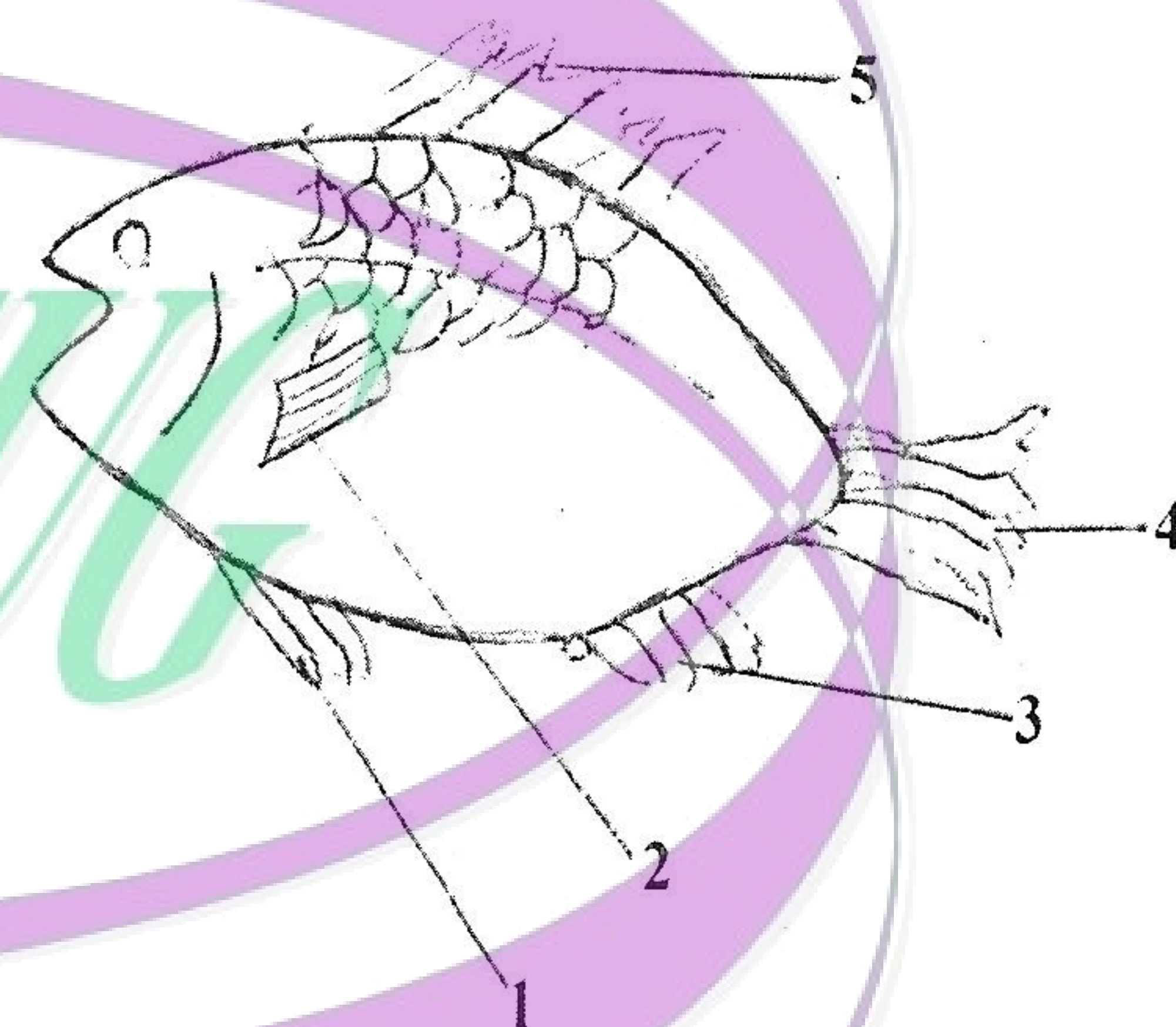
11. Below is the diagram of the human skin.



Which part produces melanin?

- A 4.
B 3.
C 2.
D 1.

12. Below is the diagram of a bony fish.

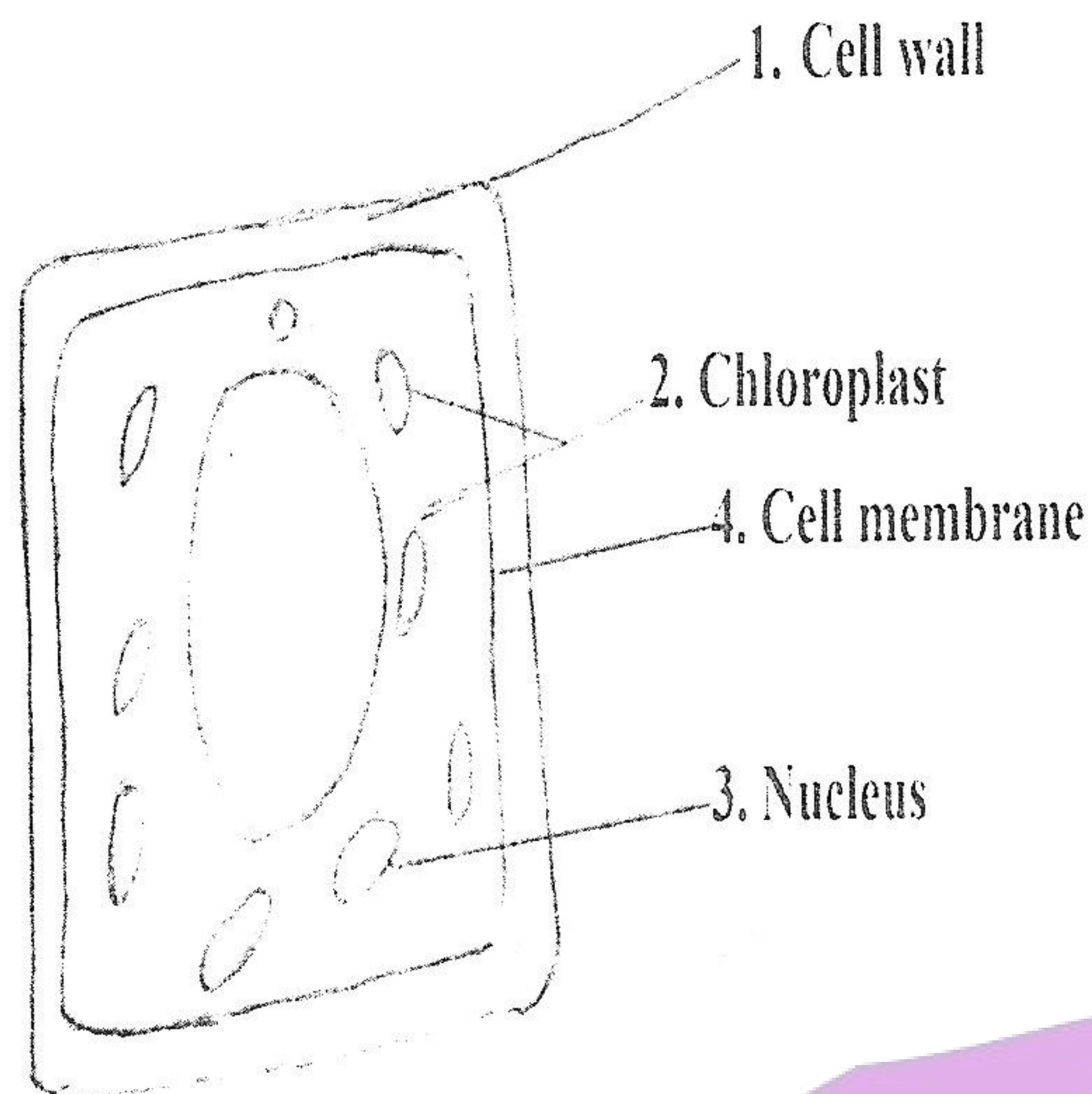


Which numbered structure functions in steering the fish?

- A 2.
B 3.
C 4.
D 5.



13. Below is the diagram of a typical plant cell.



Which structures are not found in an animal cell?

- A 2, 3.
- B 1, 3.
- C 3, 4.
- D 1, 2.

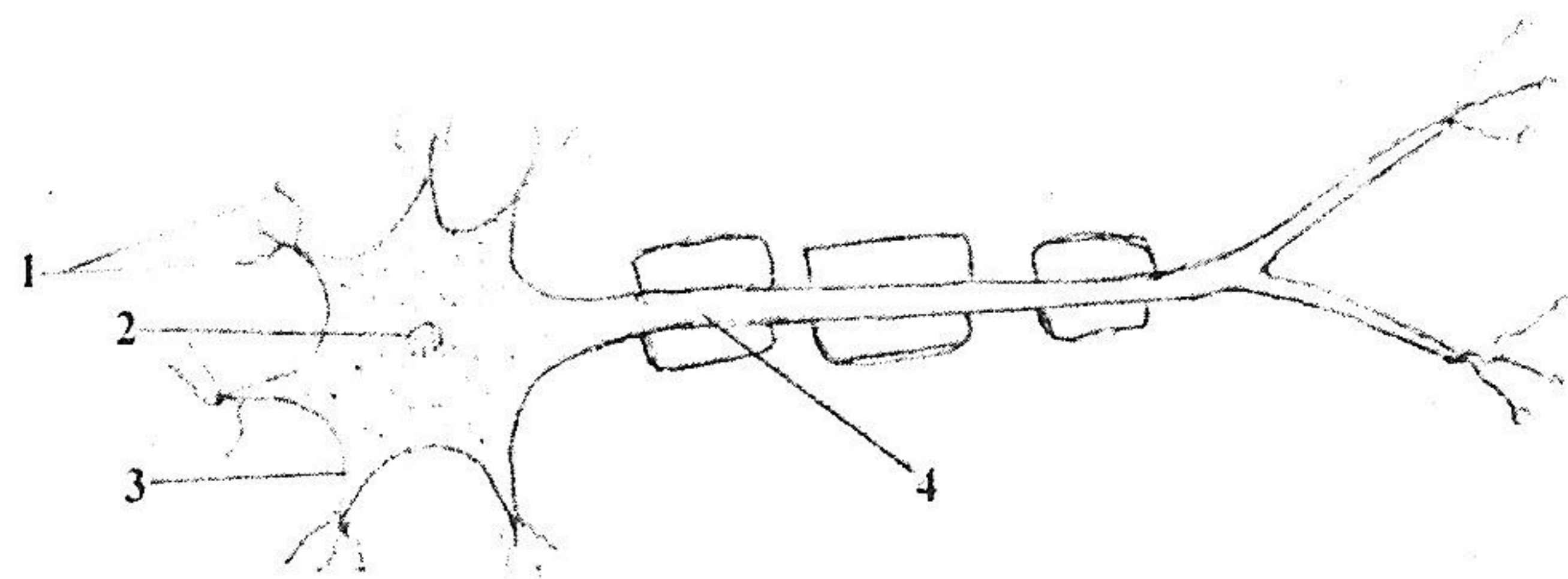
14. In which structure does fertilization take place in humans?

- A Ovary.
- B Oviduct.
- C Uterus.
- D Vagina.

15. The pancreatic juice enters the alimentary canal at the

- A Stomach.
- B Colon.
- C Ileum.
- D Duodenum.

16. The diagram below is that of a neurone.



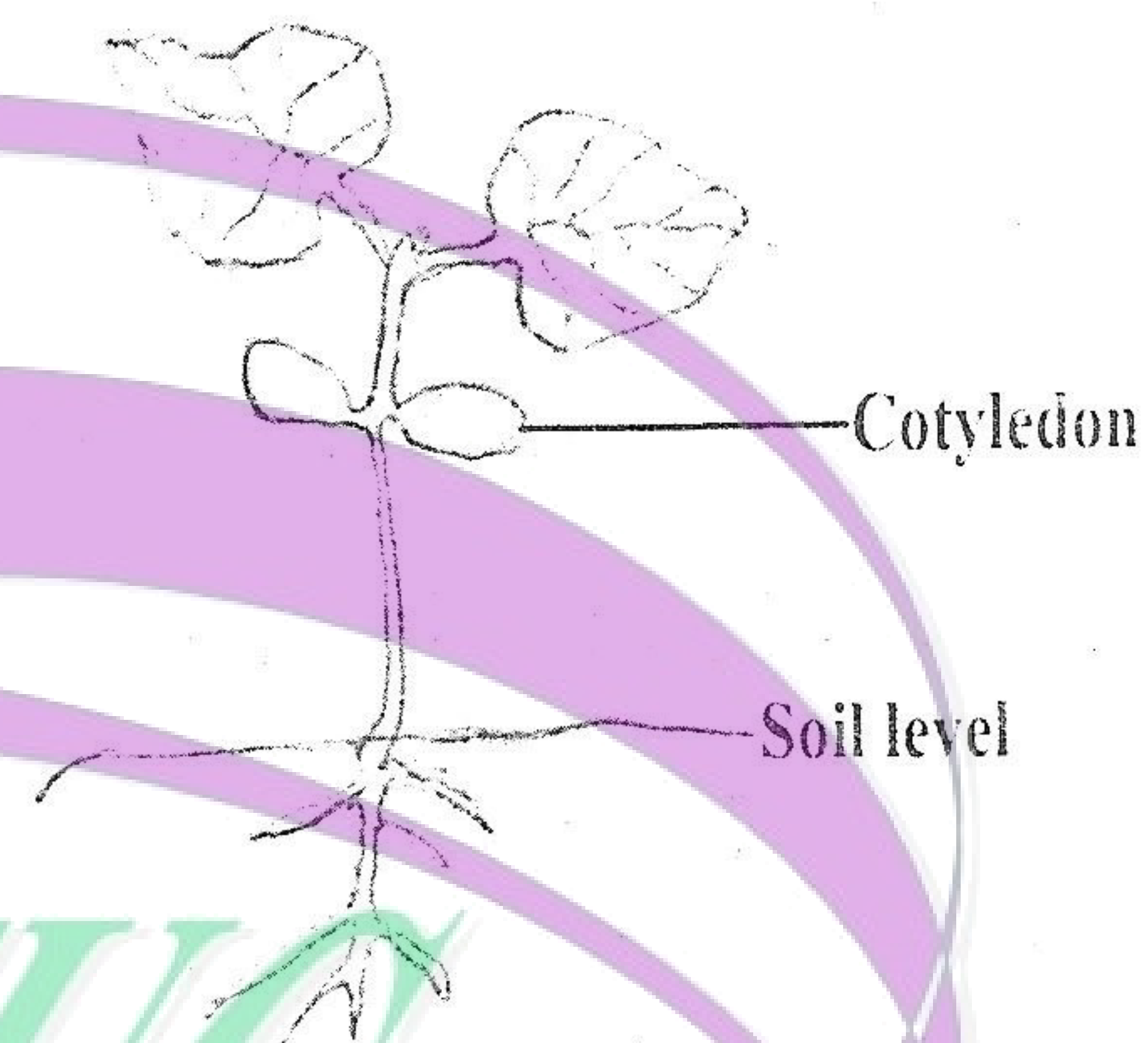
Which numbered structure is the dendron?

- A 1.
- B 2.
- C 3.
- D 4.

17. In the kidney, ultra-filtration takes place at the

- A Loop of Henle.
- B Proximal convoluted tubule.
- C Glomerulus.
- D Distal convoluted tubule.

18. The diagram below shows a seedling.



Select the correct option that suits the plant

Type of germination	Plant type
A Epigeal	Monocot
B Epigeal	Dicot
C Hypogeal	Dicot
D Hypogeal	Monocot

19. Where does gaseous exchange occur in the lungs?

- A Bronchi.
- B Bronchioles.
- C Pulmonary artery.
- D Alveoli.

20. A leaf is attached to the stem of a plant at the;

- A Axil.
- B Node.
- C Internode.
- D Bud.



SECTION III

Questions 21 -25

(Five questions)

Directions: For each of the questions below, ONE or MORE of the responses is (are) correct. Decide which of the responses is (are) correct. Then choose:

- A If 1, 2, and 3 are all correct.
 B If 1 and 2 only are correct.
 C If 2 and 3 only are correct.
 D If 1 only is correct

Directions summarized			
A	B	C	D
1, 2 & 3	1, 2 only	2, 3 only	1 only

21. Spirogyra is
 1 Autotrophic.
 2 Unicellular.
 3 Terrestrial.
22. Tendons
 1 Are muscular.
 2 Connect muscles to bones.
 3 Are tough.
23. Enzyme(s) involved in the formation of recombinant DNA.
 1 Enterokinase.
 2 Ligase.
 3 Restriction endonuclease.

24. Biological method(s) of controlling pests:

1	Introduction of tilapia fish into a lake to eat mosquito larvae.
2	Use of herbicides.
3	Spraying oil on ponds to kill aquatic organisms.

25. Eutrophication involves

1	The introduction of organic matter into a water body.
2	Death of submerged plants.
3	The overgrowth of algae in the water body.

SECTION IV

Questions 26-30

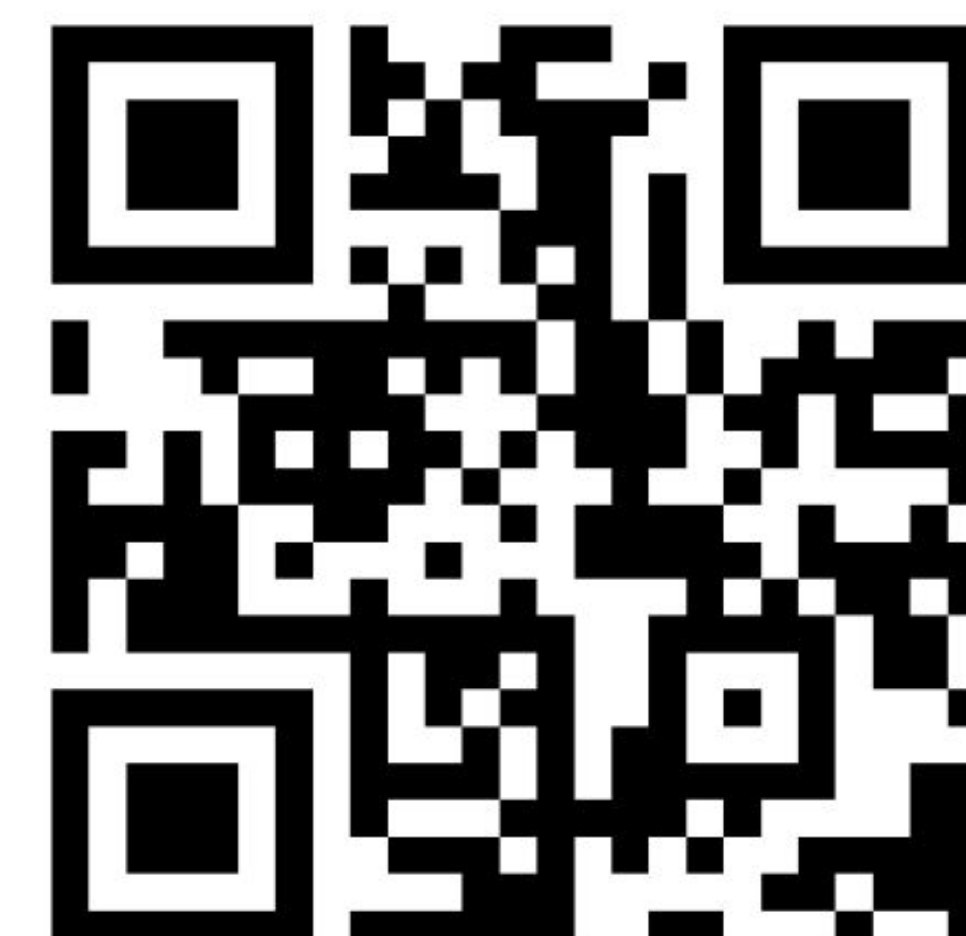
(Five Questions)

Directions: Each of the following questions consists of a statement in the left-hand column followed by a second statement in the right-hand column. Decide whether the first statement is true or false. Decide whether the second statement is true or false. Then, on the answer sheet mark

- A. If both statements are true and the second statement is a correct explanation of the first.
 B. If both statements are true and the second statement is NOT a correct explanation of the first.
 C. If the first statement is true and the second statement is false.
 D. If the first statement is false and the second statement is true.

Directions summarized			
	First Statement	Second Statement	
A	True	True	2 nd statement is a correct explanation of the first.
B	True	True	2 nd statement is NOT a correct explanation of the first.
C	True	False	
D	False	True	

	First Statement	Second Statement
26	Upper epidermal cells of leaves do not contain chlorophyll.	Guard cells are the only epidermal cells that contain chlorophyll.
27	Oxygen is an excretory product of plants.	Oxygen is produced during photosynthesis.
28	Germinating maize seeds contain reducing sugar.	Food reserves in germinating maize seed are hydrolyzed by enzymes.
29	Enzymes are protein in nature.	Enzymes are denatured by high temperature.
30	Plant cells have a fixed shape.	Plant cells have no cell membrane.



SECTION V

Questions 31 - 40

(Ten questions)

Directions: Each question consists of four lettered headings A, B, C, D. Select the heading which is closely related to the description which follows.

31.

- A Epididymis.
- B Seminal vesicle.
- C Testes.
- D Sperm duct.

Where sperms are stored.

32.

- A Xylem.
- B Phloem.
- C Pith.
- D Cortex.

Transports soluble food in plants.

33.

- A Ultra-filtration.
- B Absorption.
- C Reabsorption.
- D Assimilation.

Prevents excretion of useful substances.

34.

- A Hepatic artery.
- B Hepatic vein.
- C Vena cava.
- D Hepatic portal vein.

Transports soluble food to the liver.

35.

- A Blue.
- B Green.
- C Red.
- D Yellow.

The coloration observed when Millon's reagent is added to saliva and heated.

36.

- A Pyrenoid.
- B Cell wall.
- C Food vacuole.
- D Cytoplasm.

Where starch is stored.

37.

- A Population.
- B Community.
- C Ecosystem.
- D Colony.

Group of organisms of the same species.

38.

- A Erosion.
- B Leaching.
- C Drainage.
- D Flooding.

Washing away of nutrients from top soil into the depths

39.

- A Turgid.
- B Elastic.
- C Hard.
- D Soft.

Describes a potato strip after dipping in a concentrated salt solution for 30 minutes.

40.

- A Carrot.
- B Mango.
- C Lettuce.
- D Crayfish.

A good food for an anaemic person.

SECTION VI

Questions 41-50

(Ten questions)

Directions: This group of questions deals with biological situations. Each situation is followed by a set of questions. Select the best answer for each question.

41.

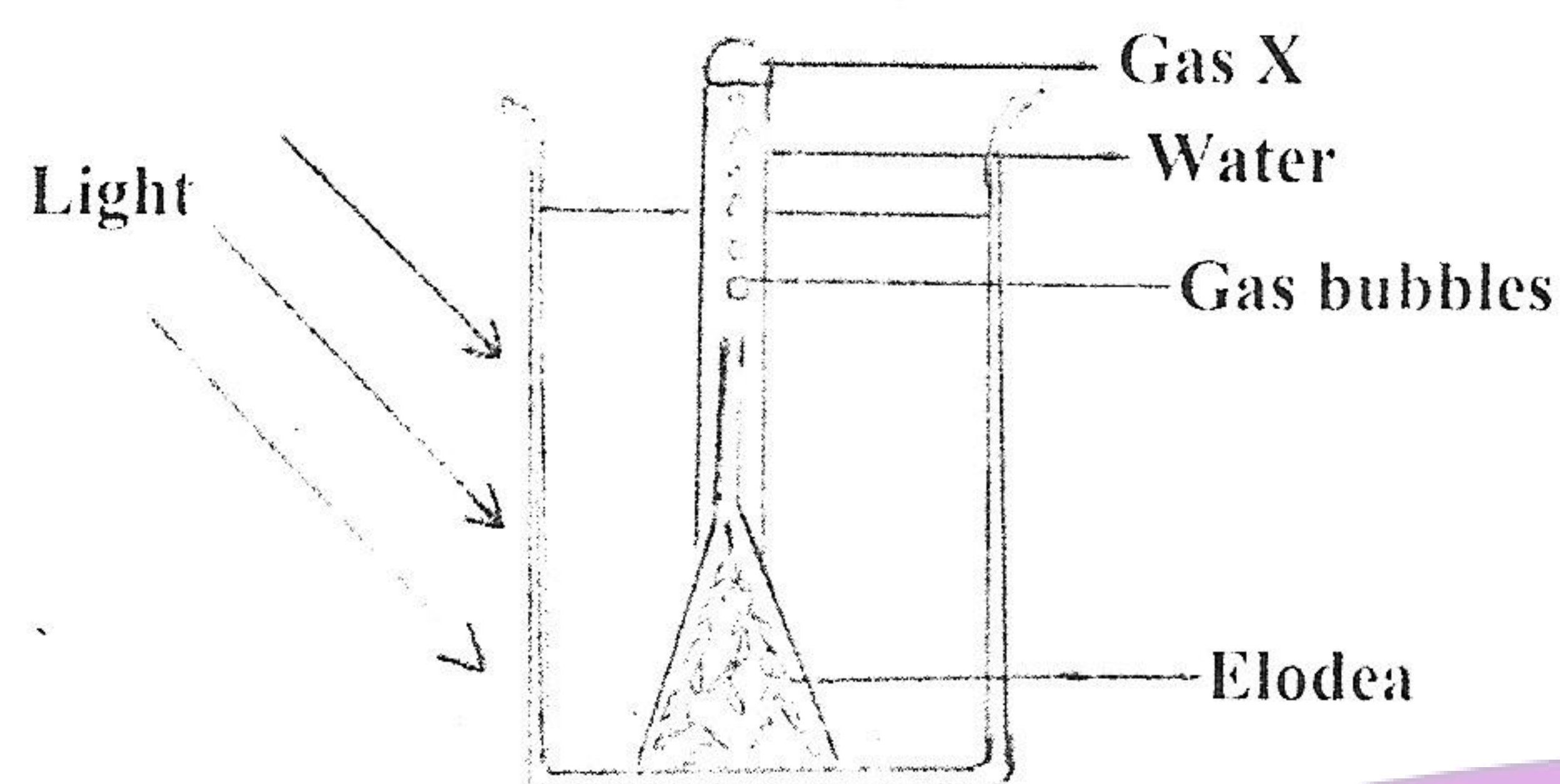
In pea plants, the allele (R) for red flower is dominant over the allele (r) for white flower. A heterozygous red-flowered plant was crossed with a white flowered plant.

The resulting offspring will be;

- A All red.
- B Half red and half white.
- C All white.
- D All pink.



42. The set up below was used in an experiment.



The gas X is:

- A Oxygen.
- B Carbon dioxide.
- C Nitrogen.
- D Carbon monoxide.

43. Old human red blood cells lack a nucleus. This is:

- A To ensure sufficient space for oxygen transport.
- B To create space for DNA storage.
- C To ensure sufficient space for food storage.
- D To create space for waste storage.

44. Water drops from leaves in the morning. This is as a result of:

- A Transpiration.
- B Respiration.
- C Guttation.
- D Photosynthesis.

45. The contents of four blood vessels in a human were analyzed and the results were as indicated in the table below. Which of these blood vessels will likely be the pulmonary vein?

Blood vessel	Oxygen	Glucose	Carbon dioxide
A	5.	3.	3.

B	5.	4.	1.
C	2.	3.	5.
D	4.	4.	4.

46. It is good to expose new born babies to sunlight in the morning. This is for:

- A The production of vitamin D.
- B The production of vitamin A.
- C The production of antibodies.
- D The production of melanin.

47. An enzyme's optimum pH is 4. Where would this enzyme work best?

- A Mouth.
- B Ileum.
- C Duodenum.
- D Stomach.

48. It is advisable to look into the horizon from time to time during reading. This is to:

- A Give rest to rods and cones.
- B Relax the iris.
- C Relax the ciliary muscles.
- D Refresh the mind.

49. Sperm cells are haploid. This is because sperm cells are:

- A Produced in the testes.
- B Produced by mitosis.
- C Produced by meiosis.
- D Produced during ejaculation.

50. In an experiment, lime water turned milky when a gas was passed through it. The gas could have been:

- A Oxygen.
- B Carbon monoxide.
- C Nitrogen dioxide.
- D Carbon dioxide.

GO BACK AND CHECK YOUR WORK

