**Year 8 Summer 1**

**Independent learning pack Week 5-6**

**Knowledge Quiz**

|  |  |  |
| --- | --- | --- |
|  | **Topic:** | **Digestion (B.15)** |
| 1 | State the 7 main organs in the digestive system | Mouth, oesophagus, stomach, pancreas, liver, small intestine, large intestine |
| 2 | Which enzyme helps us to digest carbohydrates? | Amylase |
| 3 | Which enzyme helps us to digest proteins? | Protease |
| 4 | Which enzyme helps us to digest fats? | Lipase |
| 5 | Where is amylase produced? | Salivary glands and small intestine |
| 6 | Where is protease produced? | Stomach, pancreas and small intestine |
| 7 | Where is lipase produced? | Pancreas and small intestine |
| 8 | Where is bile produced? | The liver |
| 9 | What is absorbed from the small intestine? | Nutrients |
| 10 | What is absorbed from the large intestine? | Water |

**Week 5 - Photosynthesis**

1. **a)**

**Fill in the Gaps...**

Leaves help to make \_\_\_\_\_\_\_\_\_\_\_ for a plant. They contain a green substance called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The leaves take in a gas called \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_. The roots take in \_\_\_\_\_\_\_\_\_\_\_\_ and other substances from the ground.

\_\_\_\_\_\_\_\_\_\_\_\_ energy from the Sun helps the chlorophyll change the water and carbon dioxide into the food that the plant needs. This food is a kind of sugar called \_\_\_\_\_\_\_\_. This whole process of ma1)king food is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. While this is happening, the leaves give off a gas called \_\_\_\_\_\_\_\_\_

**Words to use: oxygen, carbon dioxide, photosynthesis, water, food, chlorophyll, glucose, light**

**Maximum 9 marks**

b)

Complete the word equation for photosynthesis

sunlight

\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_ (1)

Complete the balanced symbol equation for photosynthesis

sunlight

\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_ (2)

2) Photosynthesis true or false

Write true or false for each of the statements below:

1. Plants get food from the soil. \_\_\_\_\_\_\_\_\_\_\_\_

2. Plants make food in their green leaves. \_\_\_\_\_\_\_\_\_\_\_\_

3. Water gives the plant the food it needs. \_\_\_\_\_\_\_\_\_\_\_\_\_

4. It is the green chemical in leaves that helps make the food. \_\_\_\_\_\_\_\_\_\_\_\_

5. To make food a plant needs oxygen. \_\_\_\_\_\_\_\_\_\_\_\_\_

6. Chlorophyll is green. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Photosynthesis makes chlorophyll. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Photosynthesis is when the plants make food in its leaves. \_\_\_\_\_\_\_\_\_\_\_

9. A plant needs water to make food. \_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. The plant gets food from the sun. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Sunlight is needed for photosynthesis. \_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. The speed of photosynthesis is always the same in a leaf. \_\_\_\_\_\_\_\_\_\_\_

13. The speed of photosynthesis depends on the temperature. \_\_\_\_\_\_\_\_\_\_\_

14. It needs to be warm for photosynthesis to take place quickly. \_\_\_\_\_\_\_\_\_\_

(14)

     3) Tick **one** box in each row to show whether the statement is true for
photosynthesis **or** for respiration.

|  |  |  |
| --- | --- | --- |
| **statement** | **photosynthesis** | **respiration** |
| carbon dioxide is produced |   |   |
| light is needed |   |   |
| it occurs in plants and animals |   |   |
| oxygen is produced |   |   |

2 marks

Extension

Total Marks = / 28

Red = < 9

Yellow = 10 – 19

Green = 20 - 28

**Q1.**

The diagram below shows a plant cell.



(a)     In which part of a plant would you find this type of cell?

........................................................ 1 mark

(b)     (i)      Give the function of the nucleus.

...............................................................................................................

............................................................................................................... 1 mark

(ii)     Give the function of the chloroplasts.

...............................................................................................................

............................................................................................................... 1 mark

(iii)     Give the function of the cell wall.

...............................................................................................................

............................................................................................................... 1 mark

(c)     Give the names of **two** labelled parts that are **not** present in animal cells.

1. .............................................................

2. ............................................................. 2 marks

maximum 6 marks

 (d)     Describe an investigation you could do to show how the amount of sunlight a plant receives affects plant growth over a six week period.

In your answer, you must clearly identify:

•    the independent variable (IV)

•    the dependent variable (DV)

•    the variables to control (CV)

•    how you will calculate the end result.

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4 marks

(b)     What process do plants carry out in the light and in the dark to release energy?
Tick the correct box.

|  |  |  |  |
| --- | --- | --- | --- |
| photosynthesis |   | respiration |   |
| absorption |   | dispersal |   |

1 mark

Total Marks = / 39

Red = < 15

Yellow = 16 – 24

Green = 26 - 39

maximum 5 marks

**Knowledge Quiz**

|  |  |  |
| --- | --- | --- |
|  | **Topic:** |  **Photosynthesis 1 (B.16)** |
| 1 | What is the word equation for photosynthesis? | Water + carbon dioxide -> glucose + oxygen |
| 2 | What is the word equation for photosynthesis? | 6H2O + 6CO2 -> 6O2 + C6H12O6 |
| 3 | Name the three organs in a plant | Roots, stem, leaf |
| 4 | What is the function of the palisade cells? | To absorb light for photosynthesis |
| 5 | What is the function of the waxy cuticle? | To protect the leaf |
| 6 | What is the function of the spongy layer? | Creates spaces to allow CO2 to diffuse into the leaf |
| 7 | State three ways that a leaf is adapted for gas exchange | Large surface area, thin, stomata |
| 8 | Give an example of diffusion occurring in a plant | Gas exchange (oxygen and carbon dioxide) |
| 9 | Where is osmosis used within a plant? | Water moving into the root |
| 10 | Where is active transport used within a plant? | To move minerals into the root |

Homework 4 – Leaf Adaptations

1. The ends of roots are normally covered in tiny root hair cells. What is their function? (2)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) What is the purpose of the small holes on the underside of the leaves? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)

3) Why do the palisade cells, at the top of the leaves, have so many chloroplasts? (1)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) *Label the diagram of the plant cell below* *with the following terms:* (6)

cell wall nucleus vacuole cytoplasm chloroplasts cell membrane

Starch granules

5) How is a leaf designed for photosynthesis? (3)

 i) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)

 ii) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)

 iii) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)

1. Draw lines to match the sentence beginnings with their correct endings.



Testing for starch

Number these sentences to explain how to test a leaf for starch.

|  |  |
| --- | --- |
|  | Cover the leaf with iodine – the areas with starch in will stain black |
|  | Take the leaf out of the ethanol carefully as it will be brittle – then wash it in the water bath to soften it. |
|  | Place the leaf in boiling water for 1 minute to stop it photosynthesising |
|  | Spread the leaf out on a white tile |
|  | Place a test tube full of ethanol into the hot waterand placethe leaf into the ethanol – this will remove the chlorophyll |

Total Marks = / 25

Red = < 9

Yellow = 10 – 16

Green = 26 - 25

**Extension**

**Q1.**

Plants lose water vapour from their leaves. Most of this water vapour is lost through the stomata.

(a)     Draw a ring around the correct answer to complete the sentence.

|  |  |
| --- | --- |
|   | distillation. |
| Plants lose water vapour by | filtration. |
|   | transpiration. |

**(1)**

(b)     A class of students investigated the number of stomata per mm2 on the upper surface and on the lower surface of the leaves of three species of plant, **P**, **Q** and **R**.

The students placed samples of the surface cells onto a grid on a microscope.

Student **X** counted the stomata on the lower surface of a leaf from one of the plant species.

The diagram shows part of the grid that student **X** saw under the microscope.



(i)      Complete the calculation to estimate the number of stomata per mm2 on the lower surface of this leaf.

Number of stomata in  mm2 = .........................................................

Number of stomata in 1 mm2 = ............................................................ **(2)**

The table shows the mean results for the class.

|  |  |
| --- | --- |
| **Plant species** | **Mean number of stomata per mm2 of leaf** |
| **Upper surface of leaf** | **Lower surface of leaf** |
| **P** | 40 | 304 |
| **Q** | 0 | 11 |
| **R** | 85 | 195 |

(ii)     Student **X** had counted the stomata on the lower surface of a leaf from one of the plant species.

Use your answer to part **(b)(i)**, and information in the table, to help you to answer this question.

From which plant species, **P**, **Q** or **R**, was student **X**’s leaf most likely to have

been taken? 

**(1)**

(iii)    Species **Q** is normally found growing in hot, dry conditions.

Explain **one** way in which species **Q** is adapted for living in hot, dry conditions.

Use information from the table.

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**(2)**

Total Marks = / 44

Red = < 13

Yellow = 14 – 21

Green = 22 - 31

**(Total 6 marks)**

**Knowledge Quiz**

|  |  |  |
| --- | --- | --- |
|  | **Topic:** |  **Photosynthesis 2 (B.17)** |
| 1 | Define "transpiration" | Evaporation of water from a leaf |
| 2 | Define "translocation" | Movement of sugars through a plant |
| 3 | Which substance is used to test for the presence of starch? | Iodine solution |
| 4 | What is the colour of iodine solution if starch is present? | Blue/black |
| 5 | What is the colour of iodine solution if starch is not present? | Orange/brown |
| 6 | State one hazard associated with using iodine solution | Harmful |
| 7 | Why is a leaf boiled in ethanol before being tested for starch? | To break down the cell walls |
| 8 | State one hazard associated with using ethanol | It is flammable |
| 9 | What is starch? | An insoluble store of glucose |
| 10 | How is starch formed in a plant? | During photosynthesis |

Week 6 Plant reproduction + Transpiration

Plant Reproduction

Q1

1. Label the parts of the flower:



Words to use

Anther Filament

Ovary Ovule

Petal Sepal

Style Stigma

1. What is pollination?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)
2. What part of the flower produces pollen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)
3. What part of the flower becomes the seed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)
4. Which are the names of the male and female sex cells in plants (gametes).

Male: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)

Female: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)

**Q2.**

The diagrams show two plant cells.



*not to scale*

(a)     In which part of a plant would these cells be found?

cell X ………………………… 1 mark

cell Y ………………………… 1 mark

(b)     Give the name of part B.

…………………………………… 1 mark

(c)     (i)      Give the letter which labels the nucleus.

…………… 1 mark

(ii)     What is the function of the nucleus?

…………………………………………………………………………………

………………………………………………………………………………… 1 mark

(d)     (i)      How can you tell from the diagram that photosynthesis **cannot** take place
in cell Y?

…………………………………………………………………………………

………………………………………………………………………………… 1 mark

(ii)     Which process takes place in **both** cell X and cell Y?
Tick the correct box.

egestion               

Total Marks = / 20

Red = < 9

Yellow = 9 – 15

Green = 16 - 20

fertilisation           

pollination            

respiration           

1 mark

Maximum 7 marks

**Extension**

**Q1.**

The diagram shows the reproductive parts of a flower.



(a)     Draw **one** line from **each** function to the correct structure.

|  |  |  |
| --- | --- | --- |
| **Function** |  | **Structure** |
|  |  | anthers |
| where female gametes are formed |  |  |
|  |  | ovules |
| where pollen grains are produced |  |  |
|  |  | stigma |
| where pollen grains land during pollination |  |  |
|  |  | style |

**(3)**

(b)     Suggest **one** way in which flowers attract pollinating insects.

........................................................................................................................

........................................................................................................................ **(1)**

(c)     The pollen grains land on the female part of the flower.

Describe the next stages in the process which results in seed formation.

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Total Marks = / 28

Red = < 11

Yellow = 12 – 19

Green = 20 - 28

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**(4)**

**(Total 8 marks)**