**Y11 Biology 1 PPE Foundation Topic list**

**For each topic, complete the questions that are in the Revision Guide. The page numbers you need are listed below.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Topic** | **Questions**Page Title  | **Support**Pages | **☺** | **😐** | **☹** |
| Plant and bacterial cells | 26 | Cells and Microscopy | 11-13 |  |  |  |
| Cell specialisation | 26 | Differentiation and Division | 14-16 |  |  |  |
| 5.1.1.5 Microscopy | 26 | Cells and Microscopy | 11-13 |  |  |  |
| RPA osmosis  | 26 | Exchanging Substances | 20-25 |  |  |  |
| Digestive system | 45 | The Role of Enzymes | 28-32 |  |  |  |
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| AIDS/HIV | 56 | Types of Disease | 46-48 |  |  |  |
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 **Exam Practice**

The following pages contain past exam questions that should attempt.

The grade for each question is indicated by:



Remember: to get Grade 4-5 you still have to be able to answer the 1-3 questions!

***Plant and bacterial cells***

**Week 1: Cell biology**

**Q1.** (a)     The diagram shows the structure of a bacterial cell.



(i)      On the diagram use words from the box to label structures **A**, **B** and **C**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **cell membrane** | **cell wall** | **chloroplast** | **cytoplasm** | **plasmid** |

**(3)**

(ii)     Give **one** difference between the structure of the bacterial cell and an animal cell.

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**(1)**

(iii)    Name **one** structure that is found in a plant cell but is **not** found in a bacterial or an animal cell.

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**(1)**

(b)The diagram shows two cells, a bacterial cell and a plant cell.



      (i)      Both the bacterial cell and the plant cell contain ribosomes.

What is the function of a ribosome?

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**(1)**

(ii)     The plant cell contains mitochondria but the bacterial cell does **not** contain mitochondria.

Give **one** other way in which the plant cell is different from the bacterial cell.

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**(1)**

 **(Total 7 marks)**

***Cell specialisation***

**Q2.** The diagrams show four types of cell, **A**, **B**, **C** and **D**. Two of the cells are plant cells and two are animal cells.





 (a)     (i)      Which **two** of the cells are plant cells?

Tick () **one** box.

|  |  |
| --- | --- |
| **A** and **B** |   |
| **A** and **D** |   |
| **C** and **D** |   |

**(1)**

(ii)     Give **one** reason for your answer.

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**(1)**

(b)     (i)      Which cell, **A**, **B**, **C** or **D**, is adapted for swimming?    

**(1)**

(ii)     Which cell, **A**, **B**, **C** or **D**, can produce glucose by photosynthesis?    

**(1)**

(c)     Cells **A**, **B**, **C** and **D** all use oxygen.

For what process do cells use oxygen?

Draw a ring around **one** answer.

|  |  |  |
| --- | --- | --- |
| **osmosis** | **photosynthesis** | **respiration** |

**(1)**

 (d)     Cells can be specialised for a particular job.

The diagram shows the structure of a human sperm cell.



Describe how the long tail and the mitochondria help the sperm to do its job.

Long tail \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Mitochondria \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**(4)**

**(Total 5 marks)**

***5.1.1.5 Microscopy***

**Week 2: Cell biology**

**Q3.** A student observed slides of onion cells using a microscope. **Figure 2** shows two of the slides the student observed.

**Figure 2**

****

The cells on the slides are **not** clear to see.

 (a)  Describe how the student should adjust the microscope to see the cells on Slide A more clearly.

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

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**(1)**

(b)  Describe how the student should adjust the microscope to see the cells on Slide B more clearly.

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

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**(2)**

(c)  The student made the necessary adjustments to get a clear image. **Figure 3** shows the student’s drawing of one of the cells.

**Figure 3**

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The real length of the cell was 280 micrometres (µm).

Calculate the magnification of the drawing.

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

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Magnification = × \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**(3)**

**(Total 9 marks)**

***RPA osmosis***

**Q4.**

In fish and chip shops, potatoes are cut into chips several hours before they are cooked.

The amount of water in the chips must be kept constant during this time.

To keep the water in the chips constant, the chips are kept in salt solution.

A student investigated the effect of different concentrations of salt solution on the mass of chips.

•        He weighed each of five chips.

•        He placed each chip into a different concentration of salt solution.

•        After one hour he removed the chips, then reweighed them.

His results are shown in the table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Concentration of saltsolution** | **0 M** | **0.5 M** | **1 M** | **2 M** | **3 M** |
| Mass of chip at start ingrams | 2.6 | 2.8 | 2.8 | 2.5 | 2.6 |
| Mass of chip after onehour in grams | 2.7 | 2.8 | 2.7 | 2.3 | 2.1 |

(a)     (i)      In which concentration of salt solution did the chip gain mass?

\_\_\_\_\_\_\_\_\_\_\_\_ M

**(1)**

(ii)     Complete the sentence by drawing a ring around the correct answer in the box.

|  |  |
| --- | --- |
| The chip gained mass because water entered by | digestionosmosisrespiration |

**(1)**

(b)     In which concentration of salt solution should the chips be kept?

\_\_\_\_\_\_\_\_\_\_\_\_ M

Give a reason for your answer.

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

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**(2)**

(c)     How could the student have made his investigation more reliable?

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**(1)**

**(Total 5 marks)**

***Digestive system***

**Week 3: Organisation**

**Q5.** The diagram below shows the human digestive system.



 (a)     (i)      What is Organ **A**?

Draw a ring around the correct answer.

**gall bladder                liver                stomach**

**(1)**

(ii)     What is Organ **B**?

Draw a ring around the correct answer.

**large intestine                pancreas                small intestine**

**(1)**

(b)     Digestive enzymes are made by different organs in the digestive system.

Complete the table below putting a tick (✓) or cross (✕) in the boxes.

The first row has been done for you.

|  |  |
| --- | --- |
|   | **Organ producing enzyme** |
|   | **salivary glands** | **stomach** | **pancreas** | **small intestine** |
| **Enzyme** | **amylase** | ✓ | ✕ | ✓ | ✓ |
| **lipase** |   |   |   |   |
| **protease** |   |   |   |   |

**(2)**

(c)     The stomach also makes hydrochloric acid.

How does the acid help digestion?

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

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**(1)**

(d)     Draw **one** line from each digestive enzyme to the correct breakdown product.

|  |  |  |
| --- | --- | --- |
| **Digestive enzyme** |  | **Breakdown products** |
|  |  |  |
|  |  | **amino acids.** |
| **Amylase breaks down starch into……** |  |  |
|  |  | **bases.** |
| **Lipase breaks down fats into…** |  |  |
|  |  | **fatty acids and glycerol.** |
| **Protease breaks down proteins into…** |  |  |
|  |  | **sugars.** |

**(3)**

**(Total 8 marks)**

***Blood components***

**Q6.** The bar chart shows the concentration of oxygen in the blood in three different blood vessels, **X**, **Y** and **Z**.



(a)     (i)      What is the concentration of oxygen in blood vessel **X**?

Answer \_\_\_\_\_\_\_\_\_\_\_\_\_ arbitrary units.

**(1)**

(ii)     Which blood vessel, **X**, **Y** or **Z**, carries blood from the lungs to the heart?



**(1)**

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

|  |  |  |
| --- | --- | --- |
|   |   | plasma. |
| (i) | Most of the oxygen in the blood is carried by the | red blood cells. |
|   |   | white blood cells. |

**(1)**

(ii)     Oxygen combines with a coloured pigment in the blood.

|  |  |
| --- | --- |
|   | alveoli. |
| This coloured pigment is called | haemoglobin. |
|   | lactic acid. |

**(1)**

**(Total 4 marks)**

***Plant diseases/deficiencies*Q7.**

**Week 4: Infectious diseases**

Plants need mineral ions for healthy growth.

(a)     Which part of a plant takes in mineral ions?

Tick () **one** box.

|  |  |
| --- | --- |
| Flower |  |
| Leaf |  |
| Root |  |

**(1)**

(b)     Leaves are usually green.

(i)      What is the green substance in leaves?

Draw a ring around your answer.

|  |  |  |
| --- | --- | --- |
| **chlorophyll** | **glucose** | **starch** |

**(1)**

(ii)     The green substance in leaves is important to plants.

Explain why.

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

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**(2)**

(c)     A shortage of mineral ions can affect a plant.

Draw **one** line from each mineral ion to the effect of its shortage.

|  |  |  |
| --- | --- | --- |
| **Mineral ion** |   | **Effect of its shortage** |
|   |   |   |
|   |   | Yellow leaves |
| Magnesium |   |   |
|   |   | Stunted growth |
| Nitrate |   |   |
|   |   | White flowers |

**(2)**

**(Total 6 marks)**

***Viral diseases***

**Q8.** Viruses and bacteria cause diseases in humans.

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

|  |  |  |
| --- | --- | --- |
|   |   | algae. |
|   | Organisms that cause disease are called | pathogens. |
|   |   | vaccines. |

**(1)**

(b)     In August 2011 the United Nations gave a warning that there was a new strain of the bird flu virus in China.

Bird flu may kill humans. The new strain of the bird flu virus could cause a *pandemic* very quickly.

(i)      What is a *pandemic*?

Tick () **one** box.

|  |  |
| --- | --- |
| A disease affecting the people all over one country. |   |
| A disease affecting hundreds of people |   |
| A disease affecting people in many countries. |   |

**(1)**

(ii)     The swine flu virus is carried by pigs.

The bird flu virus is likely to spread much more quickly than the swine flu virus.

Suggest **one** reason why.

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

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**(1)**

                            This notice is from a doctor’s surgery.

|  |  |
| --- | --- |
|   | **Unfortunately,antibioticswill NOT getrid of your flu.** |

(c)     (i)      Why will antibiotics **not** get rid of flu?

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**(1)**

(ii)     The symptoms of flu include a sore throat and aching muscles.

What would a doctor give to a patient to relieve the symptoms of flu?

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

**(1)**

(iii)    It is important that antibiotics are **not** overused.

Explain why.

Use words from the box to complete the sentence.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **antibody** | **bacteria** | **immune** | **resistant** | **viruses** |

Overuse of antibiotics might speed up the development

of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ strains of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

**(2)**

**(Total 7 marks)**

**Week 5: Infectious diseases**

***Protist diseases***

**Q9.** Pathogens cause infectious diseases in animals and plants.

(a)     Draw **one** line from each disease to the type of pathogen that causes the disease.

|  |  |  |
| --- | --- | --- |
| **Disease** |  | **Type of pathogen** |
|   |   | Bacterium |
| Gonorrhoea |   |   |
|   |   | Fungus |
| Malaria |   |   |
|   |   | Protist |
| Measles |   |   |
|   |   | Virus |

**(3)**

 (b)     Some parts of the human body have adaptations to reduce the entry of live pathogens.

Look at **Figure 1**.

**Figure 1**

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Explain how the trachea is adapted to reduce the entry of live pathogens.

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

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**(4)**

(c)     Malaria is a serious disease that can be fatal.

Malaria is spread to humans by infected mosquitoes.

Scientists investigated the behaviour of mosquitoes to understand how the spread of malaria could be controlled.

**Figure 2** shows the equipment the scientists used.

**Figure 2**

****

This is the method used.

1.       30 mosquitoes **infected with malaria** were placed in Container **A**.

2.       30 **uninfected** mosquitoes were placed in Container **B**.

3.       The total number of times the mosquitoes landed on the socks was recorded.

Name the dependent variable and suggest **one** control variable in this investigation.

Dependent variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Control variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**(2)**

(d)     Infected mosquitoes landed on the socks three times more often than uninfected mosquitoes.

Explain how this information can be used to reduce the spread of malaria.

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**(2)**

 **(Total 11 marks)**

***4.3.1.9 Development and discovery of drugs***

**Q10.** Medicinal drugs are used to treat diseases.

(a)     Draw **one** line from each drug to its correct use.

|  |  |  |
| --- | --- | --- |
| **Drug** |   | **Use** |
|   |   | Used as a fertility drug |
| Painkiller |   |   |
|   |   | Used to relieve disease symptoms |
| Statin |   |   |
|   |   | Used to treat leprosy |
| Thalidomide |   |   |
|   |   | Used to lower blood cholesterol |

**(3)**

(b)     New drugs need to be tested before going on sale.

The diagram shows a time line for the testing of a new drug.



(i)     How long do trials on humans take?          \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years

**(1)**

(ii)     What is the minimum number of humans the drug is tested on throughout *clinical testing?*

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

**(1)**

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

|  |  |  |
| --- | --- | --- |
|   |   | if it is toxic. |
| (i) | A new drug is first tested in the laboratory to find | if it is cost effective. |
|   |   | the optimum dose. |

**(1)**

|  |  |  |
| --- | --- | --- |
|   |   | if it is cost effective. |
| (ii) | The drug is then tested on a few volunteers to find | if it has side effects. |
|   |   | the optimum dose. |

**(1)**

**(Total 7 marks)**

***RPA – Photosynthesis***

**Week 6: Bioenergetics**

**Q11.** A student investigated the effect of light intensity on the rate of photosynthesis.

The diagram shows the apparatus the student used.



This is the method used.

1.   Set up the apparatus as shown in the diagram above.

2.   Place the lamp 10 cm from the pondweed.

3.   Turn the lamp on and count the number of bubbles produced in one minute.

4.   Repeat with the lamp at different distances from the pondweed.

(a)     Complete the hypothesis for the student’s investigation.

‘As light intensity increases, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .’

**(1)**

(b)     What was the independent variable in this investigation?

Tick **one** box.

|  |  |
| --- | --- |
| Light intensity |  |
| Number of bubbles produced |  |
| Temperature |  |
| Time |  |

**(1)**

(c)     The teacher suggests putting the boiling tube into a beaker of water during the investigation.

Suggest why this would make the results more valid.

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

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

**(1)**

**Table 1** shows the student’s results.

|  |
| --- |
| **Table 1** |
| **Distance of lamp from pondweed in cm** | **Number of bubbles produced per minute** |
| **Trial 1** | **Trial 2** | **Trial 3** | **Mean** |
| 10 | 67 | 66 | 69 | 67 |
| 20 | 61 | 64 | 62 | 62.3 |
| 30 | 53 | 51 | 52 | **X** |
| 40 | 30 | 32 | 31 | 31 |
| 50 | 13 | 15 | 15 | 14 |

(d)     Calculate value **X** in **Table 1**.

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

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

**X** = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bubbles per minute

**(1)**

(e)     State **one** error the student has made when completing the results at 20 cm.

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

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

**(1)**

(f)      What evidence in **Table 1** shows that the data is repeatable?

Tick **one** box.

|  |  |
| --- | --- |
| The number of bubbles decreases as distance decreases. |  |
| The numbers of bubbles at each distance are similar. |  |
| The student calculated a mean for each distance. |  |
| The student did the experiment three times. |  |

**(1)**

Another student investigated the effect of the colour of light on the rate of photosynthesis.

The results are shown in **Table 2**.

|  |
| --- |
| **Table 2** |
| **Colour of light** | **Rate of photosynthesis in arbitrary units** |
| Blue | 24 |
| Green | 4 |
| Red | 17 |
| Yellow | 8 |

(g)     Plot the data from **Table 2** on the graph.

You should label the x-axis.



**(3)**

(h)     Give **two** conclusions from the graph above.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**(2)**

(i)      The glucose produced in photosynthesis can be converted into amino acids to make new proteins for the plant.

Complete the sentences.

The glucose produced in photosynthesis can also be used in other ways.

Glucose can be used in respiration to release \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

Glucose can be converted to cellulose to strengthen the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

Glucose can be stored as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

**(3)**

**(Total 14 marks)**

***4.4.1.3 Uses of glucose***

**Q12.** (a)     Complete the word equation for photosynthesis.

|  |  |  |
| --- | --- | --- |
| carbon dioxide    +    water | energy | glucose    +    \_\_\_\_\_\_ |

**(1)**

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

|  |  |  |
| --- | --- | --- |
| (i) | The energy needed for photosynthesis comes from | light.osmosis.respiration. |

**(1)**

|  |  |  |
| --- | --- | --- |
| (ii) | Energy is absorbed by a green pigment called | chloride.chloroplast.chlorophyll. |

**(1)**

|  |  |  |
| --- | --- | --- |
| (iii) | If the temperature is decreased the rate of photosynthesis will | decrease.increase.stay the same. |

**(1)**

(c)     Give **three** ways in which plants use the glucose made in photosynthesis.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

**(3)**

**(Total 7 marks)**