S2 Biology CELLS TEST PRACTICE QUESTIONS

**DO NOT WRITE ON THESE SHEETS**

booklet number

1. Which line in the table correctly shows the features of an enzyme? [1]

|  |  |  |
| --- | --- | --- |
|  | type of substance | effect on rate of chemical reaction |
| A | protein | slows down |
| B | carbohydrate | speeds up |
| C | protein | speeds up |
| D | carbohydrate | slows down |

2. Enzymes are biological catalysts. The diagram below shows part of an enzyme controlled reaction.



a) What feature of an enzyme allows it to combine with only one substrate? [1]

b) What happens to an enzyme when it is boiled? [1]

c) Name a factor other than temperature which affects enzyme activity. [1]

d) Complete the word equation for the enzyme catalase

 catalase

 hydrogen peroxide \_\_\_\_(i)\_\_\_\_ + \_\_\_\_(ii) \_\_\_\_\_ [2]

3.

a) State the name of an enzyme that catalyses a synthesis reaction [1]

b) Describe what is meant by the term ‘synthesis reaction’. [2]

4. The graph below shows the effect of temperature on the activity of an enzyme.

What is the increase in enzyme activity (%) as the temperature rises from 22.5 oC to 30oC? *(choose A,B,C OR D)*

A 25

B 50

C 67

D 75 [1]

5. An investigation was carried out to find the effect of pH on the activity of an enzyme. Substrate at different pH levels was added to the enzyme in different test tubes.

a) State two variable that must be kept constant for a fair test. [2]

b) The results of this investigation are shown in the graph below

i) What is the optimum pH for this enzyme? [1]

ii) How many times more active is the enzyme at pH 9 compared to pH 10? [1]

6. An investigation was carried out into digestion of protein. Four different enzymes were added to wells cut into a petri dish containing protein in agar jelly. The experiment was repeated four times. The appearance of one dish are shown below – A clear area indicates digestion of protein.



a) Explain why trypsin digested the protein but no other enzyme did. [1]

b) The table below shows the results for the four dishes.



i) Calculate the average diameter of clear area around the trypsin?

 *[Show your workings ]*  [1]

ii) Why is it good experimental technique to do four dishes? [1]

7. The diagram below shows an investigation into the digestion of starch by amylase using a model gut.

To show that it is the amylase causing the breakdown of the starch a control experiment must be done.

Which line in the table describes correctly the content of a model gut which should be used as control? [1]

 

8. Eight model gut bags were set up in water baths as shown right.

Which two bags could be compared to investigate the **effect of pH** on the digestion of starch? Choose A, B, C or D

A 1 and 4

B 2 and 5

C 2 and 7

D 7 and 8

 [1]

9. Decide if the following statements are TRUE or FALSE. For FALSE statements state ***the word that would replace the underlined word*** to make the statement TRUE.

a. diffusion is the movement of a substance from an area where it is high in concentration to an area where it is low in concentration

b. diffusion is important to cells as it allows raw materials to leave a cell

c. only large molecules can cross the cell membrane by diffusion [3]



10. The table on the right shows the results of an experiment into heat production by germinating peas.

Collect a piece of graph paper and use the results to draw a line graph.

 [3]

11. State the missing words that would complete the word equation for aerobic respiration

glucose + \_\_ (i)\_\_\_\_ carbon dioxide + \_\_\_\_(ii) \_\_\_ + energy

[1]

12. The following experiment was set up.

Sodium hydroxide solution absorbs CO2 form the air.

Lime water turns from clear to cloudy in the presence of CO2.

Air is drawn through the apparatus from X to Y passing through each flask in turn.

PTO

Predict what would happen to the results if TWO insects were used in flask Q.

A Lime water in flask P turns cloudy more slowly

B Lime water in flask P turns cloudy more quickly

C Lime water in flask R turns cloudy more slowly

D Lime water in flask R turns cloudy more quickly [1]

13. Complete the missing words in the following paragraph.

Anaerobic respiration occurs without \_\_\_\_\_(i)\_\_\_\_ gas. It is \_\_\_\_(ii)\_\_\_ efficient than aerobic respiration and makes different products in animals and \_\_\_(iii)\_\_\_ cells. Animal cells produce \_\_\_\_(iv)\_\_ when respiring anaerobically. In humans this causes muscle \_\_\_\_\_(v)\_\_\_\_. In cells like yeast anaerobic respiration produces carbon dioxide gas and \_\_\_\_(vi)\_\_\_. [6]

14. State the words that have the following definition

a) single celled fungus

b) thread-like structure carrying the genetic code, found in the nucleus

c) how cells make more copies of themselves for growth and repair

d) uncontrolled growth of cells [4]

15. What error is shown in the following diagram of cell division?

 [1]

END OF PRACTICE QUESTIONS

Make sure you have marked your answers and addressed any weaknesses.