**Q 2004 7**

Yeast cells produce ethanol (alcohol) in a process called fermentation.

Is this process affected by temperature? Explain your answer

(b) Answer the following in relation to an experiment to prepare and show the presence of ethanol using yeast.

Draw a labelled diagram of the apparatus that you used

Name a substance that yeast can use to make ethanol.

What substance, other than ethanol, is produced during fermentation? Describe the control that you used in this experiment.

Explain the purpose of a control in a scientific experiment.

How did you know when the fermentation was finished?

Why were solutions of potassium iodide and sodium hypochlorite added to the reaction vessels after a certain period of time?

Name a substance produced during aerobic respiration that is not produced during fermentation.

**MS 2004 7**

**(a)** Yes **3**

**(**Rate of) enzyme reaction (affected by temperature) **3**

## Diagram 3, 0

[*must include evidence of anaerobic conditions and two correct labels for 3 marks*]

Sugar **or** named sugar **or** starch **3**

Carbon dioxide **or** any product of glycolysis **3**

Yeast absent (or dead) in same set up **3**

Comparison **or** purpose described **3**

No more gas given off (no more bubbles) **3**

**\*NB -** To test for alcohol – **All candidates who attempt Q 3**

Water (allow other correct product from Kreb’s cycle) **3**

**Q 2005 11 c**

(i) If yeast cells are kept in anaerobic conditions alcohol (ethanol) and another substance are produced. Describe, with the aid of a diagram, how you would keep yeast under anaerobic conditions in the laboratory.

(ii) Name a carbohydrate that you would supply to the yeast as an energy source.

(iii) Give an account of a chemical test to demonstrate that alcohol (ethanol) has been produced. Include the initial colour and final colour of the test.

**MS 2005 11 c**

|  |  |  |  |
| --- | --- | --- | --- |
| (c) | (i) | Diagram - vessel plus anaerobic conditions | **3** |
|  |  | Label (comment) relating to anaerobic conditions | **3** |
|  | (ii)  (iii) | Sugar or named sugar or starch  First reagent(s) or test named / any procedural point / initial colour / final colour / any three | **3**  **3(3)** |

*(Potassium) dichromate / add acid or warm / orange / to green*

*Iodoform test or potassium iodide / add sodium hypochlorite or warm / colourless / to yellow*

|  |  |  |
| --- | --- | --- |
| (iv) | Carbon dioxide | **3** |
| (v) | No more bubbles given off | **3** |
| (vi) | Alcohol kills yeast or yeast dies or sugar used up | **3** |

**Q 2014 13 c**

In the course of your practical studies you immobilised an enzyme and then investigated its activity. You also prepared alcohol using yeast.

1. Draw a labelled diagram of the apparatus you used to prepare alcohol.

1. Give **two** advantages of using immobilised yeast cells in the production of alcohol.

1. How did you test for the presence of alcohol?

**MS 2014 c**

|  |  |  |  |
| --- | --- | --- | --- |
| **(i)** | **Diagram: flask + contents + indication of air exclusion** | | **3** |
|  | Labels: glucose (solution) / yeast / fermentation (or air) lock | |  |
|  |  | or oil layer or anaerobic conditions | **3(1)** |
| **(ii)** | Can be reused / are easy to extract from the solution / pure product | | **2(3)** |
| **(iii)** | Iodoform test / sodium hypochlorite / potassium iodide / | |  |
|  | **heat or warm / yellow (crystals)** | |  |