

AQA, OCR, Edexcel

A Level

A Level Biology

Microbiology Questions

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Total Marks: /34

Microbiology

1. Microorganisms have long been used for biotechnological processes in research, medicine and industry.

a) There are many different types of microorganisms; however they share many similar characteristics.

- i) Identify two reasons why microorganisms are commonly used for biotechnological processes as mentioned above. (2 marks)
- ii) Complete the table below to explain some of the properties of some microorganisms. (4 marks)

<u>Property</u>	<u>Explanation</u>
Heterotroph	
autotroph	
Obligate Anaerobe	
Acidophile	

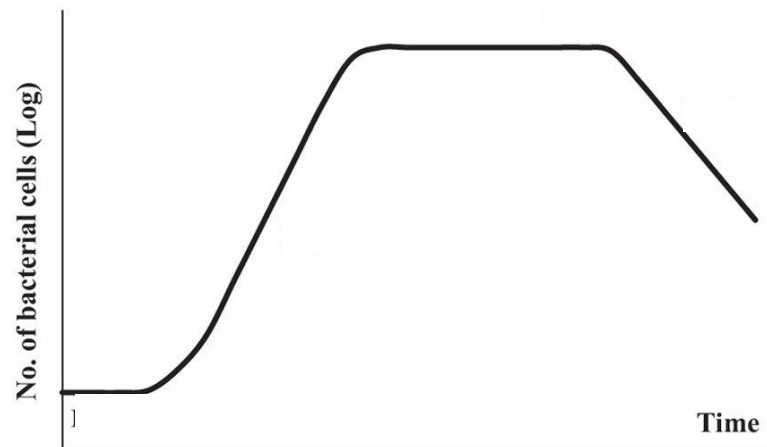
b) It is important when handling microorganisms that contamination is minimised.

- i) How is the equipment sterilised in the laboratory? (1 mark)
- iii) Identify three examples of good aseptic technique that should be used in the laboratory? (3 marks)

c) Microorganisms are grown on different types of media depending on the objective of the scientific research.

i) Suggest two uses of the products of cultured microorganisms.
(2 marks)

ii) The growth of microorganisms passes through a number of different phases. Using the graph of microorganism population growth below, explain the shape of the curve. (5 marks)



iv) What is meant by the term 'secondary metabolite'?
(1 mark)

v) Explain how to calculate population size of a bacterial culture using a haemocytometer. (3 marks)

2. Because microorganisms have great commercial value, scientists have developed many different ways of making production via microbes more efficient.

a) In industry, microorganisms are grown on a large scale in containers called bioreactors.

i) What are some advantages of using a bioreactor for growth?
(1 mark)

- ii) Batch culture and continuous culture are two industrial culture methods that are commonly used. Explain how each method is carried out and an advantage and disadvantage of each method. (6 marks)
- iii) On the graph below, draw what the growth curves would look like for microorganisms grown in batch culture compared to those grown in continuous culture. (2 marks)



- b) Even though biotechnology has many important uses in science and industry, there are still some issues surrounding their use.
 - i) Discuss some of the issues surrounding the use of microorganisms in food production. (3 marks)