Applied Science

OCR GCE Unit G634 Application of Biotechnology
Unit Recording Sheet

OCR RECOGNISING ACHIEVEMENT

Please read the instructions printed at the end of this form. **One** of these sheets, suitably completed, should be attached to the assessed work of **each** candidate.

Unit Title	Application of Biotechnology		Unit Code	G634	Session	Jan / June	Year	2	0		
Centre Name						**Centre Number**					
Candidate Name						**Candidate Number**					

Evidence: The candidate needs to produce evidence of their investigation into the use of biotechnology to solve agricultural, medical and industrial problems.

Criteria			Teacher Comment	Mark	Page No.
AO1(a).1: Candidate will produce a clearly presented booklet about the science of genetic engineering; **[0 1 2]**	AO1(a).2: candidate will produce a researched, detailed booklet about the science of genetic engineering with relevant information selected that is clearly and logically presented; **[3]**	AO1(a).3: candidate will produce a booklet about the science of genetic engineering, based on thorough research, with evidence that relevant information has been selected from a variety of sources, that is clearly and logically presented. **[4 5]**			
AO1(b).1: Candidate will produce a clearly presented booklet about the use of recombinant DNA technology in medicine or agriculture with evidence of corrected punctuation and grammar; **[0 1 2]**	AO1(b).2: candidate will produce a researched, detailed booklet about the use of recombinant DNA technology in medicine or agriculture with relevant information selected that is clearly and logically presented with correct punctuation and grammar; **[3]**	AO1(b).3: candidate will produce a booklet about the use of recombinant DNA technology in medicine or agriculture, based on thorough research, with evidence that relevant information has been selected from a variety of sources, that is clearly and logically presented with correct spelling, punctuation and grammar. **[4 5]**			
AO2(a).1: Candidate will describe how successful recombinant DNA technology is in solving problems associated with food production by crop plants and come to a simple conclusion on the overall benefits of the technology; **[0 1 2]**	AO2(a).2: candidate will describe how successful recombinant DNA technology is in solving problems associated with food production by crop plants and come to a conclusion based on clear evidence; some evidence of evaluation of at least two specific examples of the technology is needed; **[3]**	AO2(a).3: candidate will produce a comprehensive evaluation of the success of specific examples of the production of genetically modified plants; there will be clearly referenced evidence for their case and a summary of their main findings. **[4 5]**			

Criteria			Teacher Comment	Mark	Page No.
AO2(b).1: Candidate will demonstrate the completion of straightforward calculations either related to their research or to their practical investigations; some assistance may have been used; **[0 1]**	AO2(b).2: candidate will demonstrate the completion of straightforward and complex calculations either related to their research or to their practical investigations including some simple calculations on rates of reaction; limited assistance may have been used; **[2]**	AO2(b).3: candidate will demonstrate the independent completion of complex calculations either related to their research or to their practical investigations. **[3]**			
AO2(c).1: Candidate will carry out a simple analysis of the moral and ethical case for one aspect of using recombinant DNA technology in the production of GM plants and explain one of the controls placed on scientists working in this field, using some relevant evidence; **[0 1 2]**	AO2(c).2: candidate will summarise some of the moral, ethical and environmental issues concerning the use of recombinant DNA technology in the production of GM plants; candidate will need to explain two types of controls placed on scientists that work in this field; **[3 4]**	AO2(c).3: candidate will explain fluently what he/ she considers to be the main moral, ethical and environmental issues concerning the use of recombinant DNA technology in the production of GM plants; candidate will need to evaluate two types of controls placed on scientists that work in this field for how effective they are. **[5 6]**			
AO3(a).1: Candidate will plan their practical work with help, including risk assessments; candidate will construct a simple reactor and be able to produce and use an immobilised enzyme; **[0 1 2]**	AO3(a).2: candidate will produce a clear plan with limited help which includes risk assessments consistent with COSHH guidelines; **[3]**	AO3(c).3: candidate will produce a clear plan of action of their own, including detailed risk assessments consistent with COSHH guidelines, using secondary sources. **[4 5]**			
AO3(b).1: Candidate will carry out measurements from the reactor, with help; candidate will use a range of techniques and equipment; **[0 1 2]**	AO3(b).2: candidate will carry out measurements from the constructed bioreactor using an immobilised enzyme system; candidate will use a range of techniques and equipment and have repeated measurements, working with an appropriate degree of accuracy; **[3]**	AO3(b).3: candidate will carry out measurements from the constructed bioreactor, using an immobilised enzyme system, on factors affecting their bioreactor; candidate will explain the use of a range of techniques and equipment and will have repeated measurements when appropriate; candidate will work with an appropriate degree of accuracy. **[4 5]**			

Criteria			Teacher Comments	Mark	Page No.
AO3(c).1: Candidate will make and record relevant observations and measurements on the effect of temperature on the constructed bioreactor, with help; candidate will display the data obtained using tables and simple graphs, with help; candidate will show some processing of their data; **[0 1 2 3]**	AO3(c).2: candidate will make and record relevant observations and measurements on both the bioreactor and the immobilised enzymes, using precision in their measurements; candidate will display the scientific data accurately in a range of ways; candidate will show accurate processing of their data; **[4 5 6 7]**	AO3(c).3: candidate will make and record a detailed set of relevant observations with limited help, using the appropriate precision in their measurements; candidate will display the scientific data accurately in a range of ways, and process them in a manner chosen to best illustrate the trends in data; candidate will collect sufficient data to complete simple statistics on the results. **[8 9]**			
AO3(d).1: Candidate will give some interpretation of the results and relate these to how enzymes work and enzyme immobilisation; candidate will include a basic evaluation; **[0 1 2]**	AO3(d).2: candidate will interpret the results and draw basic conclusions relating their results to how enzymes work, the advantages of using bioreactors and enzyme immobilisation; candidate will evaluate their investigation and results; **[3 4 5]**	AO3(d).3: candidate will interpret the results in detail using secondary sources to support their findings; candidate will draw conclusions relating their results to the use of bioreactors and enzyme immobilisation, specifying named examples in either medicine or industry; candidate will discuss the significance of their findings in terms of how enzymes work, fully evaluating their work. **[6 7]**			
		Total/50			

If this work is a re-sit, please tick		Session and Year of previous submission	Jan / June	2	0		Please tick to indicate this work has been standardised internally	

Please note: This form may be updated on an annual basis. The current version of this form will be available on the OCR website (www.ocr.org.uk).
A completed Centre Authentication form CCS160 **must** accompany the MS1 when it is sent to the moderator.

Guidance on Completion of this Form
1   **One** sheet should be used for each candidate.
2   Please ensure that the appropriate boxes at the top of the form are completed.
3   Please enter *specific* page numbers where evidence can be found in the portfolio, and where possible, indicate to which part of the text in the mark band the evidence relates.
4   Circle the mark awarded for each strand of the marking criteria in the appropriate box and also enter the circled mark in the final column.
5   Add the marks for the strands together to give a total out of 50. Enter this total in the relevant box.