
Teacher Guide: Unit 10 Synthesising Organic Chemicals

Guidance for Teachers

- Guidance on delivery – Page 122-125 – or reference to this from the specification
- Resources – Page 129 – or reference to this from the specifications.

Guidance on Assessment

- Assessment guidance – Page 126-128 – or reference to this from the specification
- Assessment Evidence Grid Unit 10 – attached.

Assignment Work

- The assignment brief included with this unit is expected to give an idea on how to cover the required assessment criteria.
- It is important that the time spent on the topic area links to the mark awarded.
- It is hoped that centres will use this idea as a starting tool.
- An example of student's work included with this unit gives help to support the requirements of the assignment. It is hoped that this should be used to help to support the standard required.
- An assessment recording sheet is included – as a possible suggestion on how to record marks.

Suggested Time Allocation

- Based on 50-60 hours spent on this unit
- Includes work on assignment + teaching & learning time
- Some time should also be reserved for feedback and return of work after/before moderation.

Assessment Objective to be Covered	Mark Awarded	Possible Time Allocation
A01	10	12 hours
A02	14	16 hours
A03	26	30 hours

Teacher Resource Material

- Assignment No 10.1a: The Importance of Functional Groups and Isomerism
- Assignment No 10.1b: Recognising Different types of Reaction in Organic Chemistry
- Assignment No. 10.2: Preparation of an Antiseptic
- Assignment No. 10. 2: Student Work Example/Commentary on Mark Allocation
- Assessment Recording Sheet – Suggestion of a possible method to collate marks from assignments.

Unit 10: Synthesising organic chemicals**What you need to do:**

You need to produce evidence of your investigation into synthesising organic chemicals [50 marks].

This evidence needs to include:

AO1: a report or leaflet which demonstrates an understanding of organic chemistry by the correct identification and naming of functional groups, the importance of different types of isomerism and different types of reactions involving organic molecules; an investigation of therapeutic drugs, their usage and mode of action in the body [10];

AO2: research on a process used to manufacture an organic compound; you need to show an understanding of the factors to be considered by a manufacturer when scaling up a small-scale process in terms of health and safety, plant design, costs and the use of automation; evidence of appropriate calculations [14];

AO3: production of **two** preparations of organic compounds you have made and purified in the laboratory, **one** of which will be an anti-inflammatory drug; a report for each sample detailing their preparation, method of purification, percentage yield and evaluation [26].

How you will be assessed:

Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
AO1	You will demonstrate a basic knowledge and understanding of the classifications of organic compounds, identification of functional groups and isomerism; [0 1]	you will demonstrate a knowledge and understanding of the classifications of organic compounds, identification of all listed functional groups and the importance of isomerism; [2]	you will demonstrate thorough knowledge and understanding of the classifications of organic compounds, identification of functional groups within molecules and the importance of isomerism linked to specific examples. [3]	/10
	You will show understanding of some reaction types, using appropriate nomenclature and examples, and in some cases relating them to specific functional groups; [0 1]	you will show understanding of many of the reaction types given in the unit specification, using appropriate nomenclature and examples, and in most cases relating them to specific functional groups; [2]	you will show understanding and explain all the reaction types given in the specification, using appropriate nomenclature and examples, and relating them to specific functional groups. [3]	
	You will investigate some different drug types and show a basic knowledge and understanding of the principles of drug action, using some scientific terminology and conventions correctly; [0 1]	you will investigate a variety of different drug types and show knowledge and understanding of the principles of drug action, giving clear, well-explained examples in each case, using scientific terminology and conventions correctly; [2 3]	you will investigate a wide range of drug types and show a thorough knowledge and understanding of the principles of drug action, giving detailed examples, the therapeutic effect explained and the usage of such drugs evaluated, using scientific terminology and conventions correctly throughout. [4]	

Unit 10: Synthesising organic chemicals (continued)				
Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
AO2	You will produce information on a process used to manufacture an organic compound, and the factors to be considered, selecting some appropriate sources and presenting information clearly; [0 1 2]	you will show researched evidence into a process used to manufacture an organic compound, and the range of factors to be considered, selecting a range of appropriate sources, interpreting and presenting information clearly; [3]	you will show thorough research into a process used to manufacture an organic compound, and the factors to be considered, using a wide range of appropriate sources, evaluating and justifying the information, presenting it clearly, concisely and coherently. [4 5]	/14
	You will find and use information about some of the costs and benefits to individuals, companies and society associated with the manufacture of an organic compound; [0 1 2]	you will find out about and explain the costs and benefits to individuals, companies and society associated with the manufacture of an organic compound; [3]	you will interpret, explain and evaluate the costs and benefits to individuals, companies and society associated with the manufacture of an organic compound, in a clear and concise way. [4 5]	
	You will demonstrate correctly, straightforward calculations related to your research and preparations but with some assistance; [0 1]	you will demonstrate correctly, complex calculations related to your research preparations with little assistance; [2 3]	you will demonstrate, correctly and independently, complex calculations related to your research and preparations. [4]	
AO3	You will show valid risk assessments for your work; [0 1]	you will use COSHH data to produce valid risk assessments, with some assistance; [2]	you will use COSHH data to produce a valid risk assessment independently. [3]	/26
	You will have safely carried out two preparations, one of which is an anti-inflammatory drug; [0 1 2 3]	you will have planned, and safely completed, two preparations, one of which is an anti-inflammatory drug, using a range of techniques; [4 5]	you will have independently planned, and skillfully and safely completed, two preparations, one of which is an anti-inflammatory drug, using a wide range of techniques justifying reasons for the use of such techniques. [6 7 8]	
	You will make and record some observations and measurements related to both preparations, and display information clearly; [0 1]	you will make and record, in a suitable format, observations from both preparations; record some results to an appropriate level of precision and display information accurately; [2]	you will make and record, in a suitable format, appropriate observations from both preparations; record all results to an appropriate level of precision and display all information logically and accurately. [3]	
	You will provide evidence of some processing of the results; [0 1 2]	you will provide adequate processing of the results from both preparations; [3 4]	you will provide correct processing of all the results from both preparations. [5 6]	
	You will draw some conclusions related to both preparations; [0 1 2]	you will draw conclusions with explanations related to the outcomes of both preparations; [3 4]	you will be able to draw detailed conclusions, explaining and evaluating your results for both preparations and suggesting alternative techniques where appropriate. [5 6]	
Total mark awarded:				/50