GCSE (9–1)

SCIENCE

J247, J257, J248, J258, J249, J259, J250, J260

For first teaching in 2016

Exam hints for students
General Tips

Use capital letters where appropriate when writing chemical symbols. The first letter of an element symbol is always a capital.

For MCQs, if you don’t know the answer try eliminating options by annotating. Don’t leave MCQ answers blank!

If changing the answer for an MCQ, completely cross out the wrong letter and write the correct one anew. Use upper-case letters only.

Write like a scientist, not like a storyteller. Using bullet points or diagrams can reduce the amount you have to write.

Use precise terminology, so your answer shows the whole picture.

When a question asks you to make a comparison, make sure you clearly describe differences and/or similarities.

Concise responses are the best responses. All marks can be obtained within the answer space provided.

Underlining or circling key information in questions will help you remember, as will jotting down ideas and equations.

Cross out answers if you need to change them. Trying to correct an answer by writing over it can make it unclear.

Hydrocarbons contain carbon and hydrogen only.

The value of A is greater than that of B.

Use the information in the table to describe and compare the motion of the students.

For Level of Response, answer each part of the question roughly equally. Check you have answered the whole question.

The different parts of extended questions are linked. Information and answers from part (a)iii may help with part (b).

Longer answers don’t always lead to more marks. If correct responses are contradicted, marks can be lost.

Describe and compare the bonding of the materials and suggest which of them would be best to use, giving reasons for your answer.

Answer: ....................................
Use of the term ‘reliability’ is not encouraged. ‘Repeatability’, ‘confidence’ and ‘reproducibility’ are more appropriate.

Repeats only improve precision of the set of measurements and not their accuracy.

What would make the results more accurate?
Doing more repeats ☓

Repeats improve precision of the set of measurements and do not improve accuracy.

Scientific diagrams of equipment should be schematic and factual (not three-dimensional and artistic).

If describing a practical method use bullet points to give a list of simple, clear instructions someone else can follow.

Practice applying what you know to new situations. Unfamiliar experiments will still use apparatus and techniques you know.

Be specific with suggested safety precautions and why they are needed.

When describing data (graphs/tables) comment on trends, patterns and correlations, not just single data points.

Maths Skills

It’s always more accurate to round once, for the final answer, and work with unrounded values on the calculator.

Show clear working for calculations. Error carried forward may mean a response still gains marks if a mistake is made.

Lines of best fit should cover all points and have a fair distribution of points above and below the line.

Lines of best fit can be straight or curved. They don’t have to extend to the axes or origin if not appropriate.

Answer: \[65000\]
Answer: \[6.5 \times 10^4\]

You need to be able to convert results between decimal form and standard form (e.g. \(a \times 10^n\)).
Food chains show the direction energy moves between organisms. Pyramids of biomass show total energy in each level.

Make sure that your capital letters in a Punnett square are much bigger than the lower-case letters.

Antibodies made by our immune system recognise and bind to the antigens found on the outside of foreign organisms.

The substrate acts as a key and the enzyme as a lock. The active site is the specific part of the lock the key fits into.

Carry out different experiments and analyse graphs to understand how limiting factors affect photosynthesis.

The half-life of a radioactive source is the time taken for half its nuclei to decay and can be found using an activity-time graph.

The National Grid uses step-up and step-down transformers to reduce the current and increase voltage in transmission lines.

Isotopes of an element have the same number of protons in the nucleus but different numbers of neutrons.
Chemistry

Energy profile diagram arrows are single headed, show direction of energy change and extend to the limits of the change.

Enthalpy

\[ \text{mg} + O_2 \rightarrow \text{mgo} \times \]
\[ a \text{mg} + O_2 \rightarrow a \text{mgo} \checkmark \]
\[ \text{mgO}_2 \times \text{mgO} \checkmark \]

Check equations for balancing errors after writing them. Remember that any charges should also be balanced.

When writing the chemical formula of an ionic compound, remember the charges have to balance in ionic formulas.

When drawing display formulae show all the bonds in the compound.

Be clear as to whether an attraction is between molecules or between the atoms within a molecule.

Make sure you know the names of the different organic homologous series.

Atomic number is the smaller number: the number of protons in an atom. Atomic Mass is the larger number: the mass of an atom.

When drawing the structure of a metal, draw the delocalised electrons surrounding and in between the metal ions.

Half equations show you what happens to each ion in the reaction showing the electrons involved.

Many students could not remember the chemical tests for ions in solution.
OCR Resources: the small print

OCR’s resources are provided to support the delivery of OCR qualifications, but in no way constitute an endorsed teaching method that is required by OCR. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources. We update our resources on a regular basis, so please check the OCR website to ensure you have the most up to date version.

This resource may be freely copied and distributed, as long as the OCR logo and this small print remain intact and OCR is acknowledged as the originator of this work.

Our documents are updated over time. Whilst every effort is made to check all documents, there may be contradictions between published support and the specification, therefore please use the information on the latest specification at all times. Where changes are made to specifications these will be indicated within the document, there will be a new version number indicated, and a summary of the changes. If you do notice a discrepancy between the specification and a resource please contact us at: resources.feedback@ocr.org.uk.

OCR acknowledges the use of the following content: N/A

Whether you already offer OCR qualifications, are new to OCR, or are considering switching from your current provider/awarding organisation, you can request more information by completing the Expression of Interest form which can be found here: www.ocr.org.uk/expression-of-interest.

Please get in touch if you want to discuss the accessibility of resources we offer to support delivery of our qualifications: resources.feedback@ocr.org.uk.

Looking for a resource?

There is now a quick and easy search tool to help find free resources for your qualification: www.ocr.org.uk/i-want-to/find-resources/

Need to get in touch?

If you ever have any questions about OCR qualifications or services (including administration, logistics and teaching) please feel free to get in touch with our Customer Support Centre.

General qualifications
Telephone  01223 553998
Facsimile  01223 552627
Email  general.qualifications@ocr.org.uk

www.ocr.org.uk

OCR is part of Cambridge Assessment, a department of the University of Cambridge. For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored.

© OCR 2020 Oxford Cambridge and RSA Examinations is a Company Limited by Guarantee. Registered in England. Registered office The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA. Registered company number 3484466. OCR is an exempt charity.