

**GCSE**

**Manufacturing**

General Certificate of Secondary Education **J505**

**J510**

**OCR Report to Centres June 2016**

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

OCR will not enter into any discussion or correspondence in connection with this report.

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# **B231 Study of a Manufactured Product and Manufacturing a Product**

## **General Comments**

### **Folders and Presentation of Candidate's Work**

In general, the work provided by centres was well presented and carefully marked and the detailed annotation provided by many Centres was much appreciated by moderators. Where folders were clearly divided into sections, it was easy to determine how the centre had awarded their marks. It is best practice to present folders in this way and centres are urged to encourage candidates to do this.

Centres are reminded of general OCR requirements when submitting work for moderation, especially the need to clearly identify each item with Centre Number and Candidate Number. For electronic submissions, the details should be provided in the filename of every file. Paper folders should have the pages securely fixed inside a cover sheet.

Centres should note that slide binders or paper clips should not be used for securing candidates work, as these can become detached in the post and do not keep the candidates' work securely together. Further details of these requirements are found in the OCR Manufacturing Specification.

Centres are reminded that the purpose of the moderation portfolio is for the candidate to evidence her or his achievements and to communicate this achievement to the moderator and others. It is therefore helpful for each section to identify which part of the assessment criteria the evidence is seeking to address. If this process is followed, it is easy for the moderator to understand how the centre awarded their marks and should result in a straightforward moderation and assessment process that can be clearly understood by candidate and centre alike.

The comments provided by many centres on the record of assessment form URS967/8 were helpful in explaining the reasons behind the marks awarded. Centres are reminded of the requirement to clearly attach this form to the front of the assessed work of each candidate.

### **General Issues and Recommendations**

Centres are reminded that candidates cannot be awarded marks for work that is not covered by the specification and work must be clearly identified and aligned to a particular section of the specification. The OCR specification includes notes of guidance for use of the 'Best Fit' approach to marking. This can be found in section 4.3. Marking should be positive, rewarding achievement rather than penalising failure, and centres should adopt the approach described in section 4.3 of the Specification. Firstly, the descriptor that matches the candidate's work should be identified. Then, a value judgment should be made as to whether the candidate 'convincingly', 'adequately' or 'just' met the criteria statement, and the mark adjusted up or down accordingly. This is the approach used by moderators when assessing evidence presented by centres and, if centres ensure that this same process is followed, it will ensure that consistency will be easier to achieve.

In some cases, a candidate may meet the criteria at the top level for one aspect and, say, the lower level for another aspect. In these cases, the above process should be followed for each aspect, and the average of the two scores recorded as the candidate's mark. For example, if the work 'convincingly' met the criteria in the top box for 'suggested modifications' yet 'just' met the criteria for 'batch production' in the middle box, the overall mark would be the average of 12 and 5, in other words 8 or 9.

Centres are reminded that the focus of the work selected by candidates for controlled assessment tasks must be based on the lists provided in the OCR Manufacturing Specification. Candidates should not submit work for assessment if it fails to meet this requirement.

Certain words and phrases used within the marking criteria sometimes cause questions to be raised. It is not possible to give precise, generic guidance as to how phrases such as 'wide range' or 'justified' should always be interpreted. The context and type of product being studied must always be taken into account. If the evidence is presented as a simple list with no explanation, then there has clearly been no attempt at justification and the work should not be marked using a criteria block that refers to 'justified'. However, it is important to apply a 'sense check' to the amount of justification that can reasonably be expected for a particular product and this can, of course, vary from one product to another.

### **Issues and Recommendations Relating to Specific Sections**

Centres must provide clear evidence for the making of a prototype of their design solution in Unit B231 1B. Best practice is to provide 3 or more photographs, taken from different angles and with enough detail to clearly show how complete the prototype is and also to give a clear indication of its quality. If the prototype contains several different parts, for example an electronic circuit and a casing, then photographs must clearly show both parts.

Centres are encouraged to make use of digital media devices such as a Smartphone when collecting evidence. Short video clips can provide very effective evidence of pupils using tools safely and can also really enhance the evidence when assessing the quality of the finished product.

If a centre awards marks against the criteria statement 'The candidate makes a complete, quality prototype of the design solution that allows for detailed testing', moderators must be presented with enough evidence to determine that the work met this criteria, rather than that in one of the other blocks such as 'The candidate makes a prototype of the design solution that may be incomplete in part, with limited opportunity of testing' or 'The candidate makes an adequate prototype of the design solution that provided opportunity for some testing.' It is very important that this aspect of the assessment is carried out correctly and it is encouraging to see many centres providing excellent photographic evidence.

Centres are reminded that work for Unit B231 1A 'Study of a Manufactured Product' requires candidates to select a product from the list and then identify two further, similar products that have subsequently been developed using modern technology. There should be a discernible link between the three products and some evidence of how technology has enabled these developments to be achieved eg improvements in plastics production enabled the material to be used to manufacture kettles which, in turn, enabled more sophisticated shapes to be employed in kettle design. Centres are reminded that only one product from the list should be chosen. Candidates should be careful to address the correct topic for each section. For example, in B231 1A 'Study of a Manufactured Product' where a section requires an explanation of the manufacturing processes used, few if any marks can be awarded for work that refers only to the materials and components used to make the product, however comprehensive and well presented the explanation is.

It is hoped that these comments are of use to centres preparing candidates for future assessments. Centres are encouraged to refer candidates to the assessment criteria and to encourage candidates to repeatedly focus on this as their work progresses.

# B232 Manufacturing Processes

## General Comments

Most candidates attempted all of the questions on the paper but, in a number of cases, there was some evidence that candidates had not read questions carefully enough before answering. It is most important that candidates take the time to read through the question paper before attempting to answer questions. This is particularly the case where questions have a very specific focus and require extended writing in the response, such as in Quality of Written Communication (QWC) questions.

Questions relating to manufacturing sectors and products were generally well answered by candidates, but knowledge of the use of modern technologies appeared to be quite limited. This was also the case for systems and control technology and its application in manufacturing.

## Comments on Individual Questions

Question No.

- 1(a)** This question was quite well answered and many candidates scored full marks on it. Where marks were lost, this was most frequently as a result of giving products such as 'mobile phones' and 'computers' as examples of products made in the electrical sector.
- 1(b)** Most candidates scored well on this question but, in a number of cases, marks were lost by repeating one or more sectors from part **(a)**. A small number of candidates misread the question and named products rather than sectors, while some made up sector names of their own.
- 2** Responses to this question were very varied as candidates were able to choose a product on which to base their answers, many choosing textiles, food or furniture products. In all sections, marks were awarded where responses were directly relevant to the product given.
- 2(a)** This question was quite well answered, with most candidates being able to give at least one process used in the making of a product they had made or were familiar with. Many candidates scored full marks on this question, and processes mentioned ranged from simple sawing to injection moulding.
- 2(b)** Most candidates gained full marks on this question but a number of weaker descriptions were seen that scored only one of the two marks available.
- 2(c)** It was rather disappointing to see that some candidates did not offer a response for this question on safety, and others did not score any marks on it. The most common reason for loss of marks was giving responses that were PPE related, and other responses took the form of simple statements rather than descriptions as asked for in the question. Only the higher achieving candidates scored three marks or more on the question overall.
- 3(a)** Almost all candidates identified Material D as the easiest to handle but, very occasionally, Material A was chosen, it having the next highest score in the table for ease of handling.
- 3(b)** This question was well answered generally, with many candidates scoring full marks on it. Most responses were based around the fact that material B was readily available and safe to use, but value for money was also seen occasionally.

- 3(c)** Although most candidates attempted this question, only the higher achieving candidates scored two marks or more on it. In many cases the focus of the question on the workforce was missed completely and responses were simply based on adding up numbers and seeing which material scored the highest.
- 4(a)** Responses to this question were very varied and marks from zero to full marks were seen in the work presented. In many cases it appeared that candidates knew little of how research was actually used in the development of products, and some simplistic references to the use of the Internet were made with no mention of how it was used. Only a small number of higher achieving candidates scored full marks for the two examples, and the average for the question was two marks overall.
- 4(b)** Only a limited number of candidates scored well on this question, and a few offered no response to it at all. Where marks were lost, this was normally as a result of missing the focus of the question on 'product development', and making more general comments on the use of CAD/CAM in manufacturing.
- 5(a)** This question on robots was generally quite well answered, with many candidates using the example of robotic welding or spraying of cars. On a number of occasions a mark was lost as a result of the candidate failing to give the example of use asked for in the question.
- 5(b)** Candidates were less confident in their knowledge of benefits to manufacturers of using robots, and only the higher achieving members of the cohort scored well on this question. The most frequently seen responses referred to the possible reduction in the workforce, and an increased speed of production was also seen from time to time. In many cases the descriptions were overly simplistic, and the average mark for the question was two out of the four marks available.
- 5(c)** A loss of jobs for the workforce was the most commonly seen disadvantage of introducing automation, and this was allowed for one mark. Only a limited number of candidates mentioned the initial cost of buying and setting-up the equipment, or the need to train more specialist workers to programme the machines and robots.
- 6(a)(i) & (ii)**  
Most candidates attempted both of these questions, but few scored well on them. In a number of cases, responses consisted of little more than a re-arrangement of the wording in the question, and one mark out of two was the norm for each part.
- 6(b)(i) & (ii)**  
Not all candidates attempted this question and only the higher achievers scored well on it as knowledge of the application of modern technologies was generally quite limited. In a number of cases candidates did not make reference to the actual technology used, making the responses simply descriptions of the design stages, rather than explanations of the use of modern technology in them.
- 7(a)** Few candidates scored well on this question and, again, responses tended to be simple statements rather than justified explanations. Many responses referred to the prevention of sending out 'dangerous products' and only a limited number of candidates mentioned consistency of outcomes, or a reduction in the amount of waste produced in manufacturing.
- 7(b)** Responses to this question were quite disappointing, particularly as candidates were able to choose the product on which to base their answer. Simplistic responses such as 'measuring the size' and 'checking it's smooth' were often seen, and one mark only out of the two available was the most frequent result.

- 7(c)** A significant number of candidates did not even attempt this question and marks gained on it were very low. The higher achieving candidates gained marks by explaining the use of electronic scales or thermometers, but only a small number scored all three of the marks available for the question.
- 8\*** A number of candidates did not attempt this question, and the responses that were seen suggested a very limited understanding of systems and control technology or its effects on the quality of manufactured products.

In a number of cases, candidates had taken 'systems' and 'control' to be entirely different entities, as a result of which responses were weak and disjointed. Marks were awarded where there was some indication of awareness of systems, despite the references often being rather simplistic.

The candidate's Quality of Written Communication (QWC) was assessed in this question, and marks were awarded for well written answers, despite technical content often being limited.

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