OCR
Oxford Cambridge and RSA

GCSE

Manufacturing

General Certificate of Secondary Education **J505**

General Certificate of Secondary Education (Double Award)
J510

OCR Report to Centres June 2015

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.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

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:

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 judgement 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 follow this same process, it will ensure that reliable moderation will be easy 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.

Comments on Individual Questions:

Centres must provide clear evidence for the making of a prototype of their design solution in Unit 231 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 candidates using tools safely and can also really enhance the evidence when assessing the quality of a 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 e.g. 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 these 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 application of modern technologies in manufacturing was quite limited in many cases, as was an understanding of factors affecting product quality.

Comments on Individual Questions:

Question No.

1(a) This question was well answered, and almost all candidates scored full marks on it. Where marks were lost, this was often due to an error relating to the 'Packaging' sector, with candidates giving the product contained in the packaging rather than the packaging itself.

1(b) Most candidates scored well on this question, but a number lost marks by repeating a sector from part **(a)** and giving inappropriate examples of products.

2(a) Responses to this question were quite disappointing, with many candidates failing to name an appropriate process. Injection moulding and vacuum forming were accepted as suitable processes, but a significant number of candidates gave responses such as 'batch production' and 'machinery and equipment'.

2(b) Few candidates scored well on this question, and some offered no response at all. The use of cameras and scanners was mentioned in some of the better responses, but knowledge of monitoring and control was generally very limited.

2(c) Most candidates scored one mark or less on this question, and this was normally as a result of relating their response to quality control checks carried out on the finished product rather than during its manufacture.

2(d) Responses to this question were much better, with most candidates being able to describe at least one relevant safety precaution. The use of PPE featured in many responses, and general machine safety was also mentioned by some of the higher achieving candidates, many scoring full marks on the question.

3(a) Knowledge of prototyping was very mixed, and only a limited number of the higher achieving candidates scored well on this question. Many of the reasons given were very simplistic, scoring only one mark each, and very few justified responses were seen. In some cases only two reasons were given, whilst in others there was an element of repetition in them.

3(b) This question was quite well answered generally, with most candidate scoring two marks or more on it. Most responses were based around saving the cost of the materials for the final product, but some also mentioned checking suitability for the manufacturing processes.

4(a) This question was well answered by most candidates and many scored full marks on it. Where marks were lost, this was normally as a result of candidates reversing the order of the 'Material supply and control' and the 'Processing and production' stages, although occasionally candidates had made up their own stages rather than using those in the list at the start of the question.

4(b)(i) & (ii)
Responses to both parts of this question were very mixed and a number of candidates did not attempt it. In many cases only vague references to computers and robots were made, and descriptions of the uses of the technology were too simplistic.

5(a) Many candidates failed to name the material chosen for the products they gave in their responses, and only the higher achieving candidates scored well on this question.

5(b)(i) This question was quite well answered, with many candidates scoring full marks on it by making reference to the need for an external stimulus to produce a reaction in the smart material. Where marks were lost, it was apparent that candidates had little or no knowledge of smart materials and either did not offer a response or made simplistic references to the material having 'better properties' than other materials.

5(b)(ii) Most candidates scored well on this question. Examples given were generally the use of thermochromic dyes in children's mugs or spoons, but the use of SMAs in spectacle frames also appeared in a number of responses.

6(a)(i) & (ii)
The two parts of this question were generally well answered, popular responses being steel and aluminium for part **(i)** and sugar and flour for part **(ii).** Where marks were lost, this was invariably as a result of candidates using material forms from the list at the start of the question rather than examples of materials or ingredients.

6(b) Only the higher achieving candidates scored well on this question as responses were frequently too simplistic. Where factors had been adequately described, these were usually related to transportation and storage of the materials.

7(i) & (ii)
This question was not well answered and few candidates gained marks on it. In a number of cases candidates had not offered a response to one, or both, of the parts, and very few candidates made reference to any examples of materials or processes to justify their answers.

8* Almost all candidates attempted this question, but marks awarded were generally quite low as responses were often rather vague or too simplistic.

Candidates were required to discuss the benefits to the workforce of using modern technologies, but many responses were limited to rather simplistic references to more generic benefits, mostly to the manufacturer, such as faster production and improved consistency / accuracy. Few candidates scored more than half marks on the question, and only the higher achievers mentioned points such as improved working conditions, reduction in hazardous work and retraining for higher skilled jobs.

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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