

Manufacturing (Double Award)

General Certificate of Secondary Education **J505**

General Certificate of Secondary Education (Double Award) **J510**

Report on the Units

June 2010

J505/J510/R/10

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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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Chief Examiner's Report

General Comments

Candidate responses for both B232 and the B234 Units indicated that sections of the paper were not answered with confidence and there were also some blank responses. Centres appear to have prepared candidates for most of the internally assessed controlled assessments, but with some weak areas.

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 must not submit work for assessment if it fails to meet this requirement.

Further support and guidance can be obtained by contacting OCR and attending one of the **INSET** events which are held across the country.

B231 Study of a Manufactured Product and Manufacturing a Product

Folders and Presentation of Candidate's Work

In general, the work provided by Centres was well presented, carefully marked, and the detailed annotation 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 clearly best practice to present folders in this way and all Centres are urged to encourage candidates to do this. Centres are also reminded of the OCR requirements when submitting work for moderation, especially the need to clearly identify each piece with Centre Number and Candidate Number. For paper folders it is preferable to enter this information onto every page, in case pages become detached. With electronic submissions, the details should be provided in the filename of every file. In addition, paper folders should have the pages securely fixed inside a cover sheet. Centres should note that 'slide binders' should not be used as these frequently become detached in the post and do not keep the candidates' work together. Further details of these requirements are found on page 36 of the OCR Manufacturing Specification (issue February 2010).

Centres are reminded that the purpose of the portfolio is for the candidate to evidence her or his achievement 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 it is seeking to address eg 'This section shows how I contributed to my team's application of Health and Safety procedures while we were producing a batch of glove puppets'. This can then be identified in the centre's marking, and annotated accordingly. If this process is followed, it will be 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 candidates and centres.

The comments provided by Centres on the record of assessment form URS967/8 were helpful in explaining the reasons behind the marks awarded in many cases. Centres are reminded of the requirement to clearly attach this form to the front of the assessed work of each candidate. The majority of candidates made excellent use of colour, applying it in a way that enhanced the communication of the work they were seeking to evidence. However, a minority of folders were spoilt by an indiscriminate use of bold colours on a 'watermark' background that made it extremely difficult to read the text that was placed over the top. Candidates should be reminded that the principal purpose of the portfolio is to present evidence for assessment and thus they should only apply colour when it enhances this purpose.

General Issues and Recommendations

Centres are reminded of the notes of guidance for use of the 'Best Fit' approach to marking grids on p36 and p37 of the Manufacturing Specification. Marking should be positive, rewarding achievement rather than penalising failure, and centres should adopt the approach described in the Specification on p37.

- The descriptor that best describes the candidate's work should be identified.
- A value judgement should be made as to whether the Candidate 'convincingly', 'adequately' or 'just' met the criteria statement,
- A final mark allocated from the allowable range.

The Internet is a valuable resource and many candidates regularly use web-based material for their research. However, if material downloaded from the Internet is subsequently included in the project folder, the source of the material must be clearly stated. Further information is available on page 38 of the Manufacturing Specification and centres' attention is drawn to the importance of ensuring that candidates understand what is expected of them in this area.

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 must not submit work for assessment if it fails to meet this requirement. Certain words are used frequently within the marking criteria. It is not possible to give firm guidance as to how words such as 'wide range' or 'justified' should always be interpreted, so a 'sense check' should be applied to each individual case. e.g, it is important to apply a 'sense check' to the amount of justification that can reasonably be expected for a particular product as this can, of course, vary from one product to another. It is hoped that these comments are of use to Centres preparing Candidates for future assessments and further guidance will be issued following each examination series, based on issues particularly prevalent at the time.

Issues and Recommendations Relating to Specific Sections

Many candidates failed to provide good evidence for the making of a prototype of their design solution in Unit 231 1B. Some candidates used only one photograph, taken from a distance, so that it did not show any detail. 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 sections, for example, an electronic circuit and a casing, then photographs must clearly show both parts. 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.

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 discernable link between the three products and some evidence of how technology has enabled these developments. 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.

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.

However, when assessing cases such as this, it is important to consider whether this work can be included for consideration under another section ie 'gives a basic explanation of the use of materials and components...' even if the candidate has included the work under a different, incorrect heading.

B232 Manufacturing Processes

As the first paper sat by candidates of the new specification, it was encouraging to see the level of responses in this series of examinations.

- 1a) Most candidates did well with this question. Candidates are expected to have a basic knowledge of all the manufacturing sectors and products produced in each.
- 1b) Candidates need to make sure they read the question carefully, as the question asked for "sectors NOT shown above".
- 2) Drawing on candidates own experience, many were able to identify a product and the tools they used to make it. How they used the tool safely was required for full marks.
- 3a) Well attempted by most candidates. Candidates are very good at describing processing activities, but not so good at finishing and packaging stage activities.
- 3b) Most were able to give details of a quality standard although many referred to a function check. Tolerances and referring back to the customer specification are other areas that should be considered.
- 4) Most candidates picked up some marks on this question. A large number though were unable to identify a component and justify its use.
- 5a) The focus of this question is how modern technologies are used. Although the question was well answered, many described the activity listed but not in terms of modern technologies.
- 5b) Candidates generally gave one word/point answers to this question. This was generally along the lines of faster/more accurate. The question was designed to draw out candidates so they could describe how it could be saved.
- 6a,b,c) This question was understood and answered well by nearly all candidates.
- 6d) This question was understood and answered well by nearly all candidates. Candidates have a good understanding of the health risks associated with powders.
- 7) Many candidates described the points rather than justifying reasons why the points would be considered. Labour was understood by many of the candidates to be hard manual work rather than a workforce. The other two points were answered better.
- 8) A familiar question style allowing candidates to discuss the point raised. It was pleasing to see nearly every candidate attempt this question with most picking up at least one mark. There were some well developed answers, even when the candidate only made one or two points.

B233 Real World Manufacturing and Making a Manufactured Product

Folders and Presentation of Candidate's Work

In general, the work provided by Centres was well presented, carefully marked, and the detailed annotation 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 clearly best practice to present folders in this way and all Centres are urged to encourage candidates to do this. Centres are also reminded of the OCR requirements when submitting work for moderation, especially the need to clearly identify each piece with Centre Number and Candidate Number. For paper folders it is preferable to enter this information onto every page, in case pages become detached. With electronic submissions, the details should be provided in the filename of every file. In addition, paper folders should have the pages securely fixed inside a cover sheet. Centres should note that 'slide binders' should not be used as these frequently become detached in the post and do not keep the candidates' work together. Further details of these requirements are found on page 36 of the OCR Manufacturing Specification (issue February 2010)

Centres are reminded that the purpose of the portfolio is for the candidate to evidence her or his achievement 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 it is seeking to address eg 'This section shows how I contributed to my team's application of Health and Safety procedures while we were producing a batch of glove puppets'. This can then be identified in the centre's marking, and annotated accordingly. If this process is followed, it will be 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 candidates and centres.

The comments provided by centres on the record of assessment form URS967/8 were helpful in explaining the reasons behind the marks awarded in many cases. Centres are reminded of the requirement to clearly attach this form to the front of the assessed work of each candidate. The majority of candidates made excellent use of colour, applying it in a way that enhanced the communication of the work they were seeking to evidence. However, a minority of folders were spoilt by an indiscriminate use of bold colours on a 'watermark' background that made it extremely difficult to read the text that was placed over the top. Candidates should be reminded that the principal purpose of the portfolio is to present evidence for assessment and thus they should only apply colour when it enhances this purpose.

General Issues and Recommendations

Centres are reminded of the notes of guidance for use of the 'Best Fit' approach to marking grids on p36 and p37 of the Manufacturing Specification. Marking should be positive, rewarding achievement rather than penalising failure, and centres should adopt the approach described in the Specification on p37. Firstly, the descriptor that best describes 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 ensure that the process is followed also, moderation will be easy to achieve.

The Internet is a valuable resource and many candidates regularly use web-based material for their research. However, if material downloaded from the Internet is subsequently included in the project folder, the source of the material must be clearly stated. Further information is available on page 38 of the Manufacturing Specification and Centres' attention is drawn to the importance of ensuring that Candidates understand what is expected of them in this area.

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 must not submit work for assessment if it fails to meet this requirement.

Certain words are used frequently within the marking criteria. It is not possible to give firm guidance as to how words such as 'wide range' or 'justified' should always be interpreted so a 'sense check' should be applied to each individual case. eg, it is important to apply a 'sense check' to the amount of justification that can reasonably be expected for a particular product as this can, of course, vary from one product to another.

It is hoped that these comments are of use to centres preparing candidates for future assessments and further guidance will be issued following each examination series, based on issues particularly prevalent at the time.

Issues and Recommendations Relating to Specific Sections

In Unit B233 3B 'Making a Manufactured Product' candidates will be required to work in teams. It is especially important that the assessment criteria are carefully applied in this Unit. Centres are reminded that some parts of the assessment criteria grid require evidence of the candidate working as part of a team and other parts require evidence of the candidate's individual contribution. These different aspects must be clearly evidenced.

B234 Impact of modern technologies on manufacturing

As the first paper sat by candidates of the new specification, it was encouraging to see the level of responses in this series of examinations.

- 1a) Most candidates did well in this question. Candidates are expected to have a basic knowledge of all the manufacturing sectors and products produced in each.
- 1b) Candidates need to make sure they read the question carefully as the question asks for "sectors shown above".
- 2 This question aimed to get candidates to consider some of the benefits of making a prototype. Candidates were able to identify some of the savings a company could make in terms of material saving but failed to identify any other useful information that could be gained ie processing information and client feedback.
- 3a) Well attempted by most candidates. Candidates were good at describing how companies can achieve material reductions, but failed to understand the term "reuse". Many understood reuse to be recycle.
- 3b) Many listed items that can be recycled, illustrating the need to read the question more carefully. Cost or energy implications of some materials, which make recycling uneconomical, was not referred to.
- 4) The focus of this question is how modern technologies are used. Although the question was well answered, many described the activity listed but not in terms of modern technologies.
- 5a) Many candidates attempted this question but failed to describe the comparison of both options to make a decision.
- 5b,c) Well responded to question with many picking up 2 or 3 marks.
- 6a) Most candidates answered the question in terms of transportation by lorry or train. Lean manufacturing aims to reduce waste, and transportation wastes are un-required movements of material. By moving workstations closer together, the wasted transportation time is reduced.
- 6b) Most candidates answered this question in terms of people walking around. Movement of people waste is removed by moving materials closer to peoples work stations so they don't have to walk/bend/reach for them. Also by presenting the parts in the orientation they will be assembled in, this reduces this type of waste.
- 6c) Most candidates answered this question in terms of recycling scrap. Reducing scrap as a waste is achieved by monitoring processes to prevent the production of unacceptable products. It looks at taking preventative action to ensure waste is avoided. Regular maintenance of machinery and training of employees can also help reduce scrap.
- 7a) This was attempted by most candidates some of whom were unsure of some of the symbols.
- 7b) This question was answered well with many candidates describing normal delays within a manufacturing process ie waiting for paint to harden and dry or cooling of hot food
- 8 A familiar question style allowing candidates to discuss the point raised. It was pleasing to see nearly every candidate attempt this question with most picking up at least a mark. There were some well developed answers even where the candidate only made one or two points.

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