

Manufacturing

General Certificate of Secondary Education **B232**

Manufacturing Processes

Mark Scheme for June 2010

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, 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 mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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

© OCR 2010

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
1 (a)	A	One mark for each of 7 correct links: Motor manufacturing - Caravan Food and drink - Christmas cake Furniture - Dining table Clothing and textiles - Shoes Paper and print - Pop-up book Electrical - Torch Machinery and equipment - Washing machine	[7]	
(b)	A	State two different manufacturing sectors not shown above and a product One mark for each (of two) from: Chemical and pharmaceutical, Packaging, Electronic and communications One mark for each (of two products) from the stated sector. Examples <u>Chemical and pharmaceutical:</u> Asthma medication Saccharin tablets Soap <u>Packaging :</u> Perfume bottle Lemonade bottle Household cleaners. Electronic and communications: Computer mouse LCD television MP3 player.	[4]	Accept ONLY these 3 sectors.

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
2	B	<p>Two marks for a clear description of using each of two tools safely.</p> <p>Examples of marks: Stating an appropriate tool for the product named (1) and giving PPE (1), personal precautions (1) process details to ensure safety.</p> <p>Eg I tied my hair back when using the electric mixer.</p> <p>One mark only for generic response, eg I made sure I knew where the isolating switch was.</p>	[4]	No marks for the product -there to help focus.
3 (a)	F	<p>No marks for the product. Two marks for each of three activities in the manufacturing stage of the stated product, clearly described Single mark for unamplified response.</p> <p>For example: Six pack of stotty cakes</p> <p><u>Processing</u> The dough balls are mechanically flattened and placed in a proving oven at 35 degrees for 30 minutes.</p> <p><u>Finishing</u>. They are dusted lightly with flour</p> <p><u>Packaging</u>: packed in sixes in a clear LDPE bag and sealed with adhesive strip tie.</p> <p>For example: toy car wheels</p> <p><u>Processing</u>: Injection moulding of plastic into wheel shapes -12 to a sprue and 144 in total.</p> <p><u>Finishing</u>. Deflashing. The wheels are cooled with liquid nitrogen then tumbled with deflashing medium for 7 minutes.</p> <p><u>Packaging</u>: batched in 12s on wooden dowels and cling wrapped.</p>	[6]	For 2 marks needs detail. 1 mark for name of process only.

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
3 (b)	B	<p>Two marks for a clear description. Eg: Taking a sample of one product from each batch and checking the coat thickness is within tolerance. The CAM equipment robot control programme monitors the process and self adjusts as tools <i>wear/stops</i> to change tools when necessary. Check colour of sample of finished product. For automated system (as below) must have reference to checking outcome or example of quality standard for second mark. Check and set the oven temperature maintenance system. Machine temperature is controlled electronically.</p>	[2]	<p>1 mark for detail of check 1 mark for how carried out</p>
4	F	<p>No marks for giving a product. Accept reasons related to One mark for an appropriate manufacturing process used in making a product, scale of production, physical and a further one for a reason why it is appropriate. constraints, quality, ease of For example: injection moulding because can produce large quantities of consistent high quality. One mark for an appropriate component used in making a product, and a further one for a reason why it is appropriate. For example: press stud because a temporary closure is needed and press studs are a tried and tested method/can need no sewing/attractive appearance or can be self covered. One mark for an appropriate tool or piece of equipment used in making a product, and a further one for a reason why it is appropriate. For example balloon whisk because need to incorporate high volume of air/ small volume involved.</p>	[6]	<p>Accept reasons related to scale of production, physical constraints, quality, ease of use...</p>

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
5 (a)	D	<p>Two marks for clear description relating an appropriate technology to the use given. Accept common proprietary names. For example</p> <p><u>Material selection:</u> Use internet research (1) to find out material properties (1), costs and other factors. Automated testing of material strength, durability – eg fabric testing for wear (1) described (1).</p> <p><u>Calculate production costs:</u> Use a spreadsheet(1) input costs of resources or details such as materials/services/labour (1)or Electronic calculator(1)</p> <p><u>Production planning:</u> Computer package used – ref to CAD and/or CAM Inputs for each product: – quantity required and by when, resource requirements or details eg: materials and components, machinery for making, time to process, time to set up, Outputs – production schedule, files for stock ordering and management.</p>	[6]	Amplification needed for second mark.

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
(b)	D	<p>Two marks for each of two clear descriptions, giving a benefit for one mark and Amplification needed for the second. Eg</p> <p>Can be edited easily (1) to update when costs change/consider what happens when use different materials or processes(1)</p> <p>Can directly produce charts and graphs(1) illustrating the relationships between costs(1)/ comparing methods of production(1)</p>	[4]	Amplification needed for second mark.
6 (a)	C	<p>Two marks for each of two methods clearly described. For example:</p> <p>Disassembly – stated or described in terms of looking at moulding marks on plastics, carrying out basic tests</p> <p>Check the ingredients panel on packaged goods</p> <p>Consult manufacturers' literature</p> <p>Observe making – at factory or on video etc.</p> <p>Internet research – use a search engine(1) to find suppliers then check their information(1)</p>	[4]	
(b)	C	<p>Two marks for a clear description. For example</p> <p>Consult manufacturers' lists/use manufacturer's or suppliers catalogue</p> <p>Use trade directory to find suppliers' details then contact</p> <p>Internet research – use a search engine(1) to find suppliers then check their information(1)</p>	[2]	Not repeated from (a) above.

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
(c)	C	<p>One mark for each of two materials supplied as powders.</p> <p>Food – flour, spices, ginger, icing sugar Textiles – fusible/bonding powder, fabric dye Paper/chem. and pharm – talc, Titanium dioxide, mineral pigments, fishscales machinery – electrostatic paint powder coating enamels Sintered magnets – powdered rare earth metal</p>	[2]	<p>Lists not exhaustive</p> <p>Accept granular materials eg Plastics</p>
(d)	C	<p>One mark for identifying a hazard of using powders.</p> <p>Explosion, inhalation, eye injury, slipping hazard</p>	[1]	
7	B	<p>Two marks for each of three justified reasons appropriate to the factor. For example:</p> <p>Labour Need to know what skills training and experience is required for the production methods and what is available locally. (2)</p> <p>Health safety and hygiene Need to know what potential hazards are for each method and what may be done to address them. What is required to maintain acceptable standards. (2)</p> <p>Market needs Need to know whether there is high demand for one-off/hand made/bulk/high quality/low cost. ... product so that production methods can be selected to meet needs. (2)</p>	[6]	Justification needed for second mark.

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
8*	E	<p>Six marks for a detailed explanation of the use of modern technology when communicating design solutions. Examples of points (<u>specialist terms</u>): <u>Presentation package</u> on computer, projected on screen to show design ideas to client. Email to client receive <u>feedback</u> and modify <u>CAD</u> designs recalculate costings/loads. Make a short digital movie with titles/narration to show features of solution Use <u>DTP</u> to create a presentation <u>portfolio</u></p> <p>QWC</p> <p>Level 1 (0-2 marks) Basic explanation showing some understanding of the use of modern technology in communicating design solutions. Little, or no, use of specialist terms. Answers may be ambiguous or disorganised. Errors of spelling, punctuation and grammar may be intrusive.</p>		List not acceptable as structure here.

Question Number	Syllabus Ref	Expected Answer	Mark	Rationale
8	E	<p>Level 2 (3-4 marks)</p> <p>Adequate explanation showing an understanding of the use of modern technology in communicating design solutions.. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, punctuation and grammar.</p> <p>Level 3 (5-6 marks)</p> <p>Thorough detailed explanation, showing a clear understanding of the use of modern technology in communicating design solutions. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar</p>	[6]	

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

14 – 19 Qualifications (General)

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity



OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553

© OCR 2010