



GCSE

Manufacturing

General Certificate of Secondary Education

Unit **B232**: Manufacturing Processes

Mark Scheme for January 2013

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 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 2013

B232

Mark Scheme

January 2013

Question		Answer	Marks	Guidance
1	(a)	Clothing and textiles – Waterproof jacket Food and drink – Sponge cake Motor manufacture – Gearbox Chemical and pharmaceutical – Shower gel Electrical – Vacuum cleaner Furniture – Coffee table (6x1)	6	
	(b)	No mark for product One mark for an appropriate modern material or technology Examples: Gearbox – CNC machining Shower gel – Soap gelling agents Sponge cake – modified starches Waterproof jacket – Gore-Tex Coffee table – Foil wrapped/veneered MDF Vacuum cleaner – cyclone technology	1	Do not accept generic terms such as 'plastic'
	(c)	One mark for one of the following sectors: Machinery and equipment; Packaging; Electronic and communications; Paper and print Examples:- Machinery and equipment – centre lathe; crane Packaging – bean can; cardboard box Electronic and communications – mobile phone; Satellite Navigation Paper and print – magazine; calendar (1+1)	2	

B232

Mark Scheme

January 2013

Question			Answer	Marks	Guidance
2	(a)		No mark for naming product One mark for each of two tools appropriate to the product given. (2x1)	2	Tools must clearly relate to the product given
	(b)		Descriptions must include reference to the safety precautions taken. Up to two mark for a clear description. Examples:- Use of machine guards (1) to protect from entanglement/flying debris/swarf (1). Wearing goggles (1) to prevent material/ingredients getting into eyes (1). 2 x (1+1)	4	
3	(a)		Client Brief Research Develop designs Presenting designs to a client Testing (5x1)	5	Allow modified wording of stages Eg 'Developing designs'; 'presenting designs';

B232

Mark Scheme

January 2013

Question		Answer	Marks	Guidance
	(b)	<p>One mark for modern technology used; one mark for description of use.</p> <p>Examples: Use of the internet to source/import parts for design Use of CAD packages to produce drawings/3D images PowerPoint presentations to client Rapid prototyping On-screen testing packages for computer Use of digital spreadsheets to calculate costs and monitor changes</p> <p>2x (1+1)</p>	4	<p>Allow use of the same technology for each method described. Descriptions of applications must be distinctly different.</p>

B232

Mark Scheme

January 2013

Question		Answer	Marks	Guidance
4	(a)	<p>One mark for naming the check made; one mark for a description.</p> <p>Examples: Measuring the size of a component using a micrometer Checking the weight of a cake on scales Checking the shape of material with a template (1+1)</p>	2	
	(b)	<p>One mark for each of two appropriate pieces of equipment.</p> <p>Examples: Measuring equipment (vernier/micrometer/gauges); digital scales; templates; hardness testing machine; temperature probe; abrasion testing machine (2x1)</p>	2	Allow reference to tool used in part (a)
	(c)	<p>One mark for example of use; one mark for technology used; one mark for detail of use.</p> <p>Example: Moulded plastic product removed from injection moulding machine by robot arm (1); held in front of scanner (and rotated); scanner compares product digitally with master (1); product rejected if faulty/inaccurate (1) (3x1)</p>	3	

B232

Mark Scheme

January 2013

Question		Answer	Marks	Guidance
5	(a)	<p>One mark for each of three relevant factors.</p> <p>Examples: Cost Manufacturing processes needed Availability Recyclability/environmental issues Safe to work with Physical properties Colour availability Easy to machine/form/fabricate/use Ease of storage</p> <p>(3x1)</p>	3	
	(b)	<p>(i) One mark for modern material; one mark for description of use.</p> <p>Examples: Flexi-ply used in furniture manufacture Kevlar in protective vest</p> <p>(1+1)</p>	2	<p>Accept use of a 'smart' material</p> <p>Example:- SMA used to spectacle frames</p>
		<p>(ii) One mark for appropriate example; Up to two further marks for explanation. Must include reference to change to material (1) and 'external stimulus' (1).</p> <p>Example: Photochromic dye in child's mug; changes colour when temperature reaches prescribed limits. Shape memory alloy.</p> <p>(3x1)</p>	3	Do not reward simple repetition from part (6)(i)

B232

Mark Scheme

January 2013

Question			Answer	Marks	Guidance
6			<p>One mark for an example of use; one mark for IDCT used; one mark for description of use.</p> <p>Research: Web, search engines, email questions, contact suppliers/customers via email.</p> <p>Example; The internet is used to search for information relating to the product (1) so that pictures can be printed (1) and used to create a market research questionnaire (1)</p> <p>Developing design ideas: CAD, drawing tablet</p> <p>Presenting design to a client: Use of a projector, prototyping, cad images</p> <p style="text-align: right;">(3+3+3)</p>	9	
7			<p>One mark for example; one mark for modern technology; one mark for description of use.</p> <p>Examples: Using air-conditioning to automatically monitor the temperature (1) so its adjusted to best suit the workers (1), constantly monitoring/changing (1).</p> <p>Robots are used in hazardous areas (1), operators don't have to enter, remote working/control (1). Workers kept out of dangerous environments (1).</p> <p style="text-align: right;">(3+3)</p>	6	

B232

Mark Scheme

January 2013

Question			Answer	Marks	Content	Guidance
						Levels of response
8*			Six marks for a discussion or critical evaluation of issues relating to the introduction of new technologies into production methods	6	<p>Response may include reference to the following points:</p> <ul style="list-style-type: none"> Cost of replacing/updating machines Effects on workforce/redundancies Is extra production required Training staff on new technologies Long-term return on investment Changes needed to factory layout/services Energy/environmental issues 	<p>Level 3 (5–6 marks) Thorough analysis showing a clear understanding of the issues to be considered by a manufacturer when introducing new technologies. 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> <p>Level 2 (3–4 marks) Adequate discussion showing an understanding of the issues to be considered by a manufacturer when introducing new technologies. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the part in a structured format. There may be occasional errors in spelling, punctuation and grammar.</p> <p>Level 1 (0–2 marks) Basic discussion showing limited understanding of the issues to be considered by a manufacturer when introducing new technologies. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of spelling, punctuation and grammar may be intrusive.</p>
			Total	60		

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

OCR Customer Contact Centre

Education and Learning

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 2013

