OCR
RECOGNISING ACHIEVEMENT

GCSE

Manufacturing

General Certificate of Secondary Education

Unit **B234:** Impact of Modern Technologies on Manufacturing

Mark Scheme for January 2011

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OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

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Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

Question			Expected Answers	Marks	Rationale
1	(a)		**Complete the links below to identify which manufacturing sector makes the products listed.** Clothing and textile – Sports shirt Electronic & communication – Computer keyboard Paper & print – Holiday brochure Furniture – Kitchen cabinet Food & drink – Orange squash Motor manufacturing – Moped Machinery & equipment – Power press.	**[7]**	One mark for each correct link Products not from the list, a correct technology could be rewarded
	(b)		**Select two products from the list above and, for each one, state one modern technology used in the product.** One mark for each modern technology or material <u>correctly</u> related to chosen product.	**[2]**	No marks for naming products
2	(a)		**Give two examples of products that have improved because of developments in materials or ingredients. Describe the changes to each product.**		Incorrect ingredient or material changes can still be rewarded
		(i)	No marks for naming products.		Responses must relate to **material/ingredient** developments only
		(ii)	One mark for correctly identified material development related to named product. One mark for naming change in product; two marks for clear description of change.	**[6]**	Do not reward repetition

Question			Expected Answers	Marks	Rationale
3	(a)		**State which stage in the life of the product uses the most energy.** Normal use (1)	**[1]**	
	(b)		**Explain how the amount of energy used for distribution could be reduced.** Explanation may refer to: reduction in weight of product; reducing weight/size of packaging; using more fuel efficient form of transport (electric vans; train); no small number deliveries/pack more in vehicles; packaging shaped for multiple stacking.	**[3]**	One mark for each point made; max two marks if not explained
	(c)		**Name three types of 'green' energy supply.** Wind; wave; solar, hydro-electric; geo-thermal, water turbines, under water dams, tidal.	**[3]**	One mark for each green energy source given
4	(a)		**Describe, using examples, two benefits that modern technologies have brought to:**		One mark for naming benefit; additional mark for description of use of modern technology
		(i)	Designers of manufactured products CAD packages; 3D imaging; CAD/CAM; rapid prototyping.	**[4]**	
		(ii)	Manufacturers CAD/CAM; CNC machines; Computer controlled materials handling; less workers needed/robotics.	**[4]**	Do not reward simple repetition
		(iii)	The workforce Less hard manual work; cleaner working environment; better machine safety.	**[4]**	

Question			Expected Answers	Marks	Rationale
5	(a)		**Describe how waste can be reduced in the following stages of the manufacture of a new product.**		One mark for identification,
		(i)	Designing Designer reducing amount of material needed; product designed to be made by less wasteful process; minimum number of components/parts to assemble; Prototyping to avoid waste; recyclable materials used.	**[2]**	Second mark for description of reduction Do not reward repetition
		(ii)	Production Most efficient scale of production; reduce time taken to produce; use of automation; efficient quality control.	**[2]**	
		(iii)	Packaging Reduce amount/size of packaging; reuse/recycle materials; make easier to pack in larger quantities.	**[2]**	
6	(a)		**Describe how DFMA can help in the 'end of life' disposal of used products.** Can also allow easy disassembly; remove parts for reuse/recycling/safe disposal; avoid excessive landfill.	**[2]**	One mark for relevant point plus one mark for description
	(b)		**Describe the use of 'standardised components' in manufacturing assembly** Description to include reference to buying in components from suppliers; use of standardised components saving time and money; standardising on tooling for manufacture/assembly; readily available supplies; no need to manufacture parts Two marks for points made plus one mark for clear description.	**[3]**	

Question			Expected Answers	Marks	Rationale
	(c)		**Explain what is meant by the term 'common fixing strategy'.** Explanation to include reference to commonality of approach in design and assembly; time and cost savings from standardisation; reasons for/benefits of common strategy. (3x1)	**[3]**	Two marks for points raised plus one mark for a explanation
7	(a)		**Describe the impact of modern technologies on the following:** • **lifestyle** • **product availability** • **product cost**		One mark for each factor given plus one mark for description
		(i)	Examples: Lifestyle – less manual work for workers; better working environment; more products to suit different lifestyles.		
		(ii)	Product availability – bigger range of products available; new products more often brought out; greater availability as products made more quickly.		
		(iii)	Product cost – things made more quickly and cost effectively; economy of scale; less use of materials keeps down cost.	**[6]**	

Question			Expected Answers	Marks	Rationale
8*			**Discuss the implications of 'remote manufacture'.** Level 1 (0 – 2 marks) Basic discussion showing some understanding of the implications of remote manufacturing. 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. Level 2 (3 – 4 marks) Adequate discussion showing an understanding of the implications of remote manufacturing. 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. Level 3 (5 – 6 marks) Thorough analysis showing a clear understanding of the implications of remote manufacturing. 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.	**[6]**	Six marks for a discussion or critical evaluation of relevant implications The response may include the following points: Environmental effects of materials/products movement; increased output means more use of raw materials; loss of jobs in developed countries; possible quality issues; economic effects in affected countries; concentration of manufacturing pollution; ethical trading
			Total marks for paper	**[60]**	

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

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Facsimile: 01223 552553